

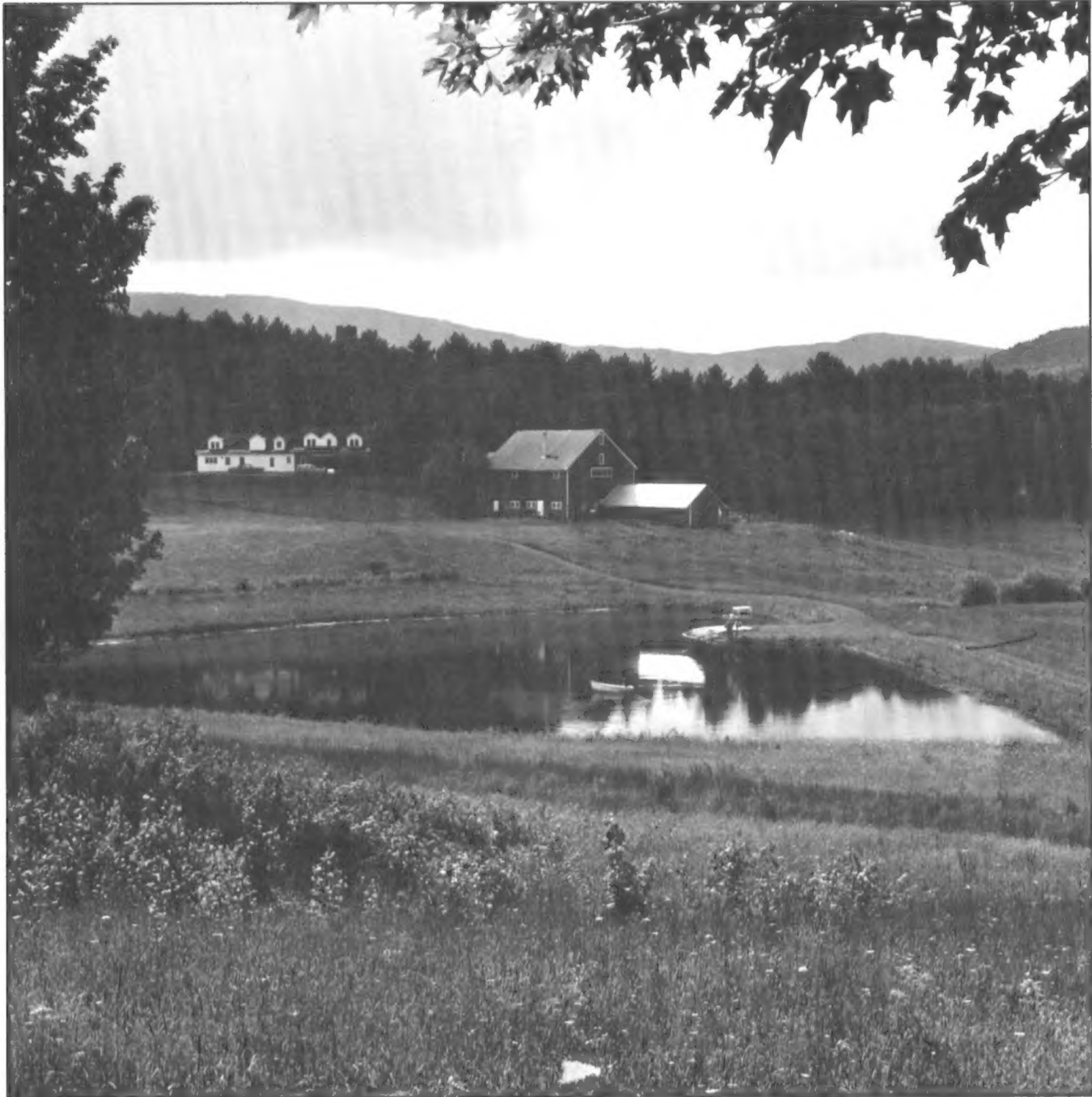


United States
Department of
Agriculture

Soil
Conservation
Service

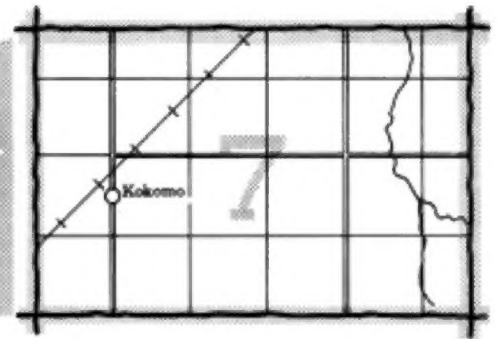
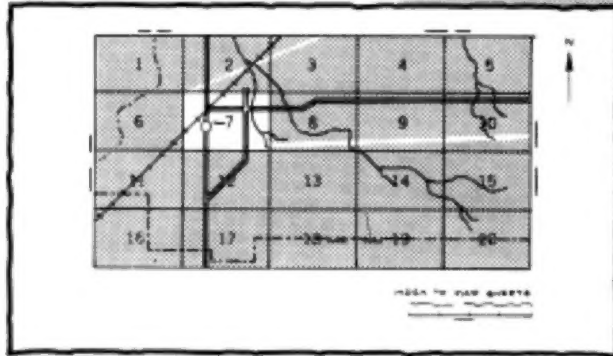
In Cooperation with
New Hampshire
Agricultural
Experiment Station

Soil Survey of Sullivan County New Hampshire



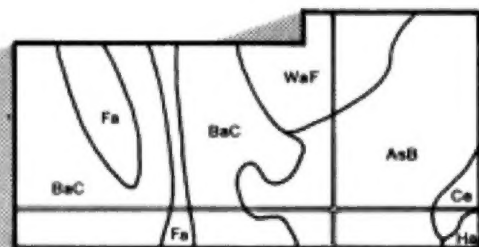
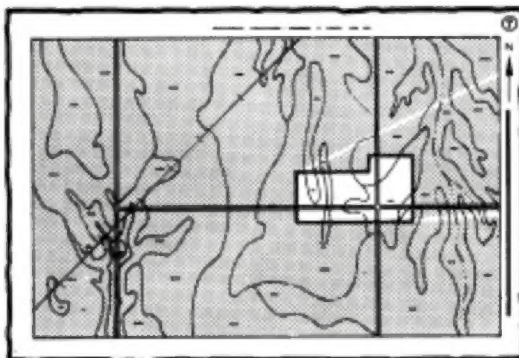
HOW TO USE

1. Locate your area of interest on the "Index to Map Sheets"

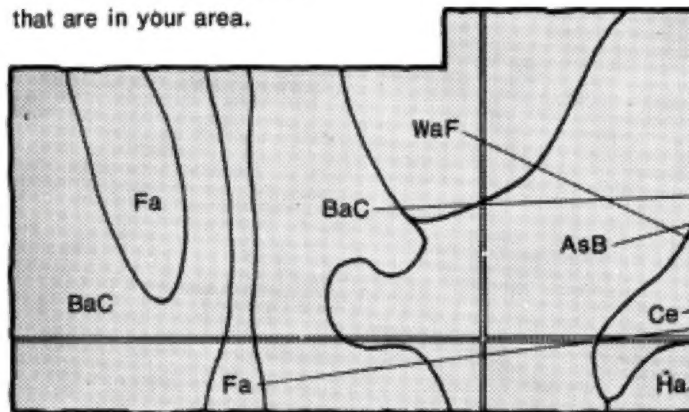


2. Note the number of the map sheet and turn to that sheet.

3. Locate your area of interest on the map sheet.



4. List the map unit symbols that are in your area.



Symbols

AsB

BaC

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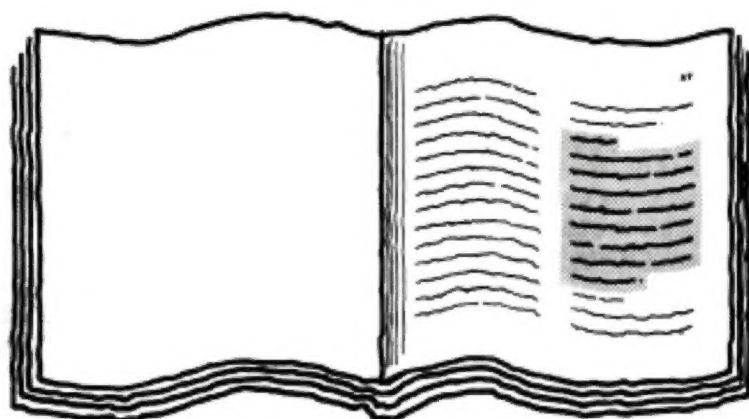
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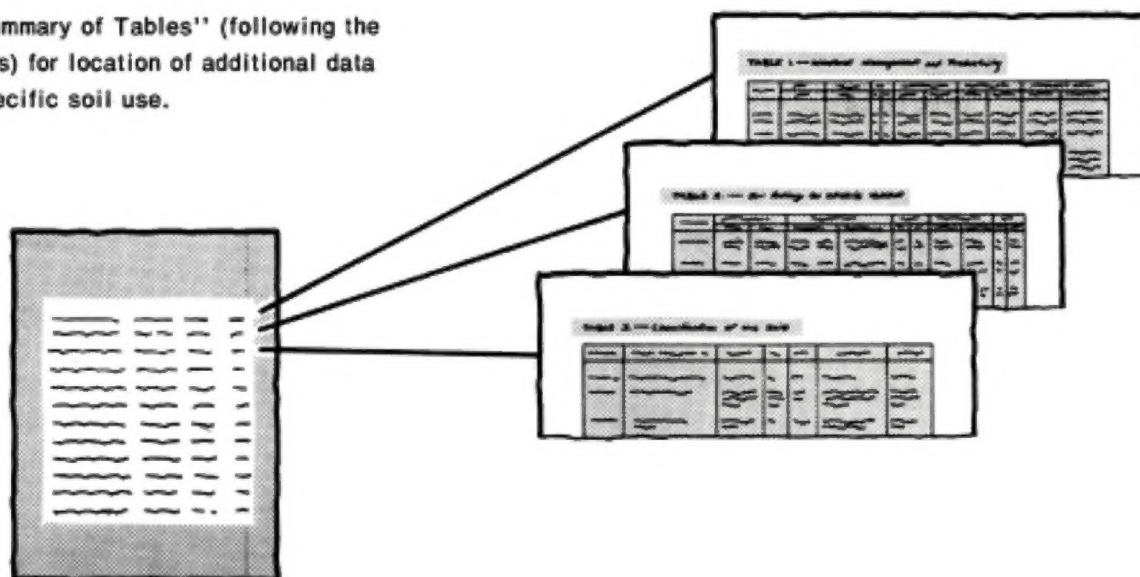
THIS SOIL SURVEY

5. Turn to "Index to Soil Map Units" which lists the name of each map unit and the page where that map unit is described.



Soil Map Unit	Page	Soil Map Unit	Page
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2. 1000000000	100	11. 1000000000	100
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4. 1000000000	100	13. 1000000000	100
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8. 1000000000	100	17. 1000000000	100
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85. 1000000000	100	94. 1000000000	100
86. 1000000000	100	95. 1000000000	100
87. 1000000000	100	96. 1000000000	100
88. 1000000000	100	97. 1000000000	100
89. 1000000000	100	98. 1000000000	100
90. 1000000000	100	99. 1000000000	100
91. 1000000000	100	100. 1000000000	100

6. See "Summary of Tables" (following the Contents) for location of additional data on a specific soil use.



Consult "Contents" for parts of the publication that will meet your specific needs.

7. This survey contains useful information for farmers or ranchers, foresters or agronomists; for planners, community decision makers, engineers, developers, builders, or homebuyers; for conservationists, recreationists, teachers, or students; to specialists in wildlife management, waste disposal, or pollution control.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other federal agencies, state agencies including the Agricultural Experiment Stations, and local agencies. The Soil Conservation Service has leadership for the federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was performed in the period 1969-80. Soil names and descriptions were approved in 1980. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1980. This survey was made cooperatively by the Soil Conservation Service and the New Hampshire Agricultural Experiment Station. It is part of the technical assistance furnished to the Sullivan County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

Cover: Most of the area of this farm is in the Monadnock-Marlow-Lyman unit on the general soil map. Croydon Mountain is in the far background.

contents

Index to map units	iv	Wildlife habitat	62
Summary of tables	vi	Engineering	63
Foreword	viii	Soil properties	69
General nature of the survey area	1	Engineering index properties.....	69
History and population trends.....	1	Physical and chemical properties.....	70
Climate.....	2	Soil and water features.....	70
Drainage	2	Engineering index test data.....	72
Farming.....	2	Classification of the soils	73
Forestry.....	2	Soil series and their morphology.....	73
Transportation and industry	3	Formation of the soils	99
How this survey was made	3	Parent material.....	99
General soil map units	5	Climate.....	99
Soil descriptions	5	Plant and animal life.....	100
Detailed soil map units	11	Relief.....	100
Soil descriptions	11	Time	100
Prime farmland	57	Bedrock geology.....	100
Use and management of the soils	59	Glacial geology	101
Crops and pasture.....	59	References	103
Woodland management and productivity	61	Glossary	105
Recreation	62	Tables	113

soil series

Adams series	73	Ninigret series.....	86
Agawam series	74	Ondawa series.....	87
Bernardston series.....	75	Ossipee series.....	87
Borochemists.....	75	Peru series	88
Cardigan series.....	75	Pillsbury series.....	88
Chocorua series.....	76	Pittstown series	89
Colton series.....	76	Podunk series	90
Croghan series.....	77	Quonset series.....	90
Dutchess series	78	Raynham series.....	91
Greenwood series	78	Rumney series.....	91
Hadley series	79	Saco series	92
Haven series	79	Saco Variant	92
Hermon series	80	Scio series.....	93
Kearsarge series	81	Stissing series.....	93
Limerick series.....	81	Sunapee series.....	94
Lyman series.....	82	Sunday series	95
Lyme series.....	83	Udorthents.....	95
Marlow series.....	83	Unadilla Variant	96
Monadnock series.....	84	Warwick series.....	96
Moosilauke series.....	85	Windsor series	97
Naumburg series	85	Winooski series.....	97

index to map units

AdA—Adams loamy sand, 0 to 3 percent slopes	11	Hb—Hadley silt loam, occasionally flooded.....	24
AdB—Adams loamy sand, 3 to 8 percent slopes	12	HcA—Haven very fine sandy loam, 0 to 3 percent	
AdC—Adams loamy sand, 8 to 15 percent slopes.....	12	slopes.....	24
AdE—Adams loamy sand, 15 to 50 percent slopes...	12	HcB—Haven very fine sandy loam, 3 to 8 percent	
AgA—Agawam very fine sandy loam, 0 to 3 percent		slopes.....	25
slopes.....	13	HcC—Haven very fine sandy loam, 8 to 15 percent	
AgB—Agawam very fine sandy loam, 3 to 8 percent		slopes.....	26
slopes.....	13	HeB—Hermon fine sandy loam, 3 to 8 percent	
BdB—Bernardston silt loam, 3 to 8 percent slopes ...	13	slopes.....	26
BdC—Bernardston silt loam, 8 to 15 percent slopes .	14	HeC—Hermon fine sandy loam, 8 to 15 percent	
BdD—Bernardston silt loam, 15 to 25 percent		slopes.....	26
slopes.....	14	HeD—Hermon fine sandy loam, 15 to 25 percent	
BeB—Bernardston stony silt loam, 3 to 8 percent		slopes.....	26
slopes.....	14	HmB—Hermon stony fine sandy loam, 3 to 8	
BeC—Bernardston stony silt loam, 8 to 15 percent		percent slopes	26
slopes.....	15	HmC—Hermon stony fine sandy loam, 8 to 15	
BeD—Bernardston stony silt loam, 15 to 25 percent		percent slopes	26
slopes.....	15	HmD—Hermon stony fine sandy loam, 15 to 25	
BeE—Bernardston stony silt loam, 25 to 50 percent		percent slopes	28
slopes.....	15	KeE—Kearsarge-Cardigan-Rock outcrop complex,	
Bp—Borochemists, ponded	16	25 to 50 percent slopes.....	28
CaB—Cardigan-Kearsarge silt loams, 3 to 8 percent		Lk—Limerick silt loam.....	29
slopes.....	17	LeE—Lyman-Monadnock-Rock outcrop complex, 25	
CaC—Cardigan-Kearsarge silt loams, 8 to 15		to 50 percent slopes	29
percent slopes	17	LuA—Lyme-Moosilauke loams, 0 to 3 percent	
CaD—Cardigan-Kearsarge silt loams, 15 to 25		slopes.....	29
percent slopes	17	LyA—Lyme-Moosilauke stony loams, 0 to 3 percent	
CbC—Cardigan-Kearsarge-Rock outcrop complex, 8		slopes.....	30
to 15 percent slopes	18	LyB—Lyme-Moosilauke stony loams, 3 to 8 percent	
CbD—Cardigan-Kearsarge-Rock outcrop complex,		slopes.....	30
15 to 25 percent slopes.....	19	MaB—Marlow loam, 3 to 8 percent slopes.....	31
Ch—Chocorua mucky peat	19	MaC—Marlow loam, 8 to 15 percent slopes	31
CoA—Colton sandy loam, 0 to 3 percent slopes.....	19	MaD—Marlow loam, 15 to 25 percent slopes	32
CoB—Colton sandy loam, 3 to 8 percent slopes.....	20	MbB—Marlow stony loam, 3 to 8 percent slopes.....	32
CoC—Colton sandy loam, 8 to 15 percent slopes.....	20	MbC—Marlow stony loam, 8 to 15 percent slopes.....	32
CoE—Colton sandy loam, 15 to 50 percent slopes....	20	MbD—Marlow stony loam, 15 to 25 percent slopes ..	33
CyA—Croghan loamy fine sand, 0 to 5 percent		MbE—Marlow stony loam, 25 to 50 percent slopes...	33
slopes.....	20	McB—Monadnock fine sandy loam, 3 to 8 percent	
DtB—Dutchess silt loam, 3 to 8 percent slopes	22	slopes.....	33
DtC—Dutchess silt loam, 8 to 15 percent slopes	22	McC—Monadnock fine sandy loam, 8 to 15 percent	
DtD—Dutchess silt loam, 15 to 25 percent slopes.....	22	slopes.....	34
DuC—Dutchess stony silt loam, 8 to 15 percent		McD—Monadnock fine sandy loam, 15 to 25	
slopes.....	22	percent slopes	34
DuD—Dutchess stony silt loam, 15 to 25 percent		MfB—Monadnock stony fine sandy loam, 3 to 8	
slopes.....	23	percent slopes	34
DuE—Dutchess stony silt loam, 25 to 50 percent		MfC—Monadnock stony fine sandy loam, 8 to 15	
slopes.....	23	percent slopes	35
Gw—Greenwood mucky peat.....	23	MfD—Monadnock stony fine sandy loam, 15 to 25	
Ha—Hadley silt loam, frequently flooded.....	24	percent slopes	35

MrC—Monadnock-Hermon association, very stony, sloping.....	35	PvC—Pittstown stony silt loam, 8 to 15 percent slopes.....	47
MrD—Monadnock-Hermon association, very stony, moderately steep.....	36	Pw—Podunk fine sandy loam.....	47
MrE—Monadnock-Hermon association, very stony, steep.....	36	QsC—Quonset-Warwick gravelly fine sandy loams, 8 to 15 percent slopes.....	47
MuD—Monadnock-Hermon association, extremely bouldery, moderately steep.....	37	QsD—Quonset gravelly fine sandy loam, 15 to 35 percent slopes.....	48
MvB—Monadnock-Lyman stony fine sandy loams, 3 to 8 percent slopes.....	37	Ra—Raynham silt loam.....	48
MvC—Monadnock-Lyman stony fine sandy loams, 8 to 15 percent slopes.....	38	Ro—Rock outcrop.....	48
MvD—Monadnock-Lyman stony fine sandy loams, 15 to 25 percent slopes.....	38	Ru—Rumney loam.....	49
MwB—Monadnock-Lyman-Rock outcrop complex, 3 to 8 percent slopes.....	39	Sa—Saco silt loam.....	49
MwC—Monadnock-Lyman-Rock outcrop complex, 8 to 15 percent slopes.....	39	Sb—Saco Variant mucky silt loam.....	49
MwD—Monadnock-Lyman-Rock outcrop complex, 15 to 25 percent slopes.....	40	SdA—Scio silt loam, 0 to 3 percent slopes.....	50
Na—Naumburg loamy sand.....	41	SdB—Scio silt loam, 3 to 8 percent slopes.....	50
NnA—Ninigret fine sandy loam, 0 to 5 percent slopes.....	41	SgA—Stissing silt loam, 0 to 5 percent slopes.....	50
Of—Ondawa fine sandy loam.....	41	ShA—Stissing stony silt loam, 0 to 3 percent slopes.....	51
Ot—Ossipee mucky peat.....	42	ShB—Stissing stony silt loam, 3 to 8 percent slopes.....	51
PcA—Peru loam, 0 to 3 percent slopes.....	42	SnA—Sunapee fine sandy loam, 0 to 3 percent slopes.....	51
PcB—Peru loam, 3 to 8 percent slopes.....	42	SnB—Sunapee fine sandy loam, 3 to 8 percent slopes.....	52
PcC—Peru loam, 8 to 15 percent slopes.....	43	SoB—Sunapee stony fine sandy loam, 3 to 8 percent slopes.....	52
PeB—Peru stony loam, 0 to 8 percent slopes.....	43	SoC—Sunapee stony fine sandy loam, 8 to 15 percent slopes.....	52
PeC—Peru stony loam, 8 to 15 percent slopes.....	43	Su—Sunday loamy sand.....	53
PeD—Peru stony loam, 15 to 25 percent slopes.....	44	Ub—Udorthents, smoothed.....	53
PgA—Pillsbury loam, 0 to 3 percent slopes.....	44	UnB—Unadilla Variant silt loam, 3 to 8 percent slopes.....	53
PIA—Pillsbury stony loam, 0 to 3 percent slopes.....	44	UnC—Unadilla Variant silt loam, 8 to 15 percent slopes.....	54
PIB—Pillsbury stony loam, 3 to 8 percent slopes.....	45	UnE—Unadilla Variant silt loam, 15 to 50 percent slopes.....	54
Pr—Pits, gravel.....	45	Ur—Urban land.....	54
PtA—Pittstown silt loam, 0 to 3 percent slopes.....	45	WaB—Warwick-Quonset gravelly fine sandy loams, 3 to 8 percent slopes.....	54
PtB—Pittstown silt loam, 3 to 8 percent slopes.....	46	WdA—Windsor loamy sand, 0 to 3 percent slopes....	55
PtC—Pittstown silt loam, 8 to 15 percent slopes.....	46	WdB—Windsor loamy sand, 3 to 8 percent slopes....	55
PvB—Pittstown stony silt loam, 3 to 8 percent slopes.....	46	WdC—Windsor loamy sand, 8 to 15 percent slopes..	55
		WdE—Windsor loamy sand, 15 to 50 percent slopes	56
		Wn—Winooski silt loam.....	56

summary of tables

Temperature and precipitation (table 1).....	114
Freeze dates in spring and fall (table 2)	115
<i>Probability. Temperature.</i>	
Growing season (table 3).....	115
<i>Probability. Daily minimum temperature.</i>	
Acreage and proportionate extent of the soils (table 4)	116
<i>Acres. Percent.</i>	
Prime farmland (table 5).....	118
<i>Soil name.</i>	
Yields per acre of crops and pasture (table 6)	119
<i>Corn silage. Alfalfa hay. Grass-legume hay. Grass hay.</i>	
<i>Grass-clover. Pasture.</i>	
Woodland management and productivity (table 7)	124
<i>Ordination symbol. Management concerns. Potential</i>	
<i>productivity. Trees to plant.</i>	
Recreational development (table 8).....	132
<i>Camp areas. Picnic areas. Playgrounds. Paths and trails.</i>	
<i>Golf fairways.</i>	
Wildlife habitat (table 9)	141
<i>Potential for habitat elements. Potential as habitat for—</i>	
<i>Openland wildlife, Woodland wildlife, Wetland wildlife.</i>	
Building site development (table 10)	147
<i>Shallow excavations. Dwellings without basements.</i>	
<i>Dwellings with basements. Small commercial buildings.</i>	
<i>Local roads and streets. Lawns and landscaping.</i>	
Sanitary facilities (table 11).....	155
<i>Septic tank absorption fields. Sewage lagoon areas.</i>	
Construction materials (table 12)	163
<i>Roadfill. Sand. Gravel. Topsoil.</i>	
Water management (table 13).....	170
<i>Limitations for—Pond reservoir areas; Embankments,</i>	
<i>dikes, and levees; Aquifer-fed excavated ponds. Features</i>	
<i>affecting—Drainage, Terraces and diversions, Grassed</i>	
<i>waterways.</i>	
Engineering index properties (table 14)	177
<i>Depth. USDA texture. Classification—Unified, AASHTO.</i>	
<i>Fragments greater than 3 inches. Percentage passing</i>	
<i>sieve—4, 10, 40, 200. Liquid limit. Plasticity index.</i>	

Physical and chemical properties of the soils (table 15)	187
<i>Depth. Clay. Moist bulk density. Permeability. Available water capacity. Reaction. Erosion factors. Organic matter.</i>	
Soil and water features (table 16).....	192
<i>Hydrologic group. Flooding. High water table. Bedrock. Potential frost action. Risk of corrosion.</i>	
Engineering index test data (table 17)	196
<i>Classification. Grain-size distribution. Liquid limit. Plasticity index.</i>	
Classification of the soils (table 18).....	197
<i>Family or higher taxonomic class.</i>	

foreword

This soil survey contains information that can be used in land-planning programs in Sullivan County. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

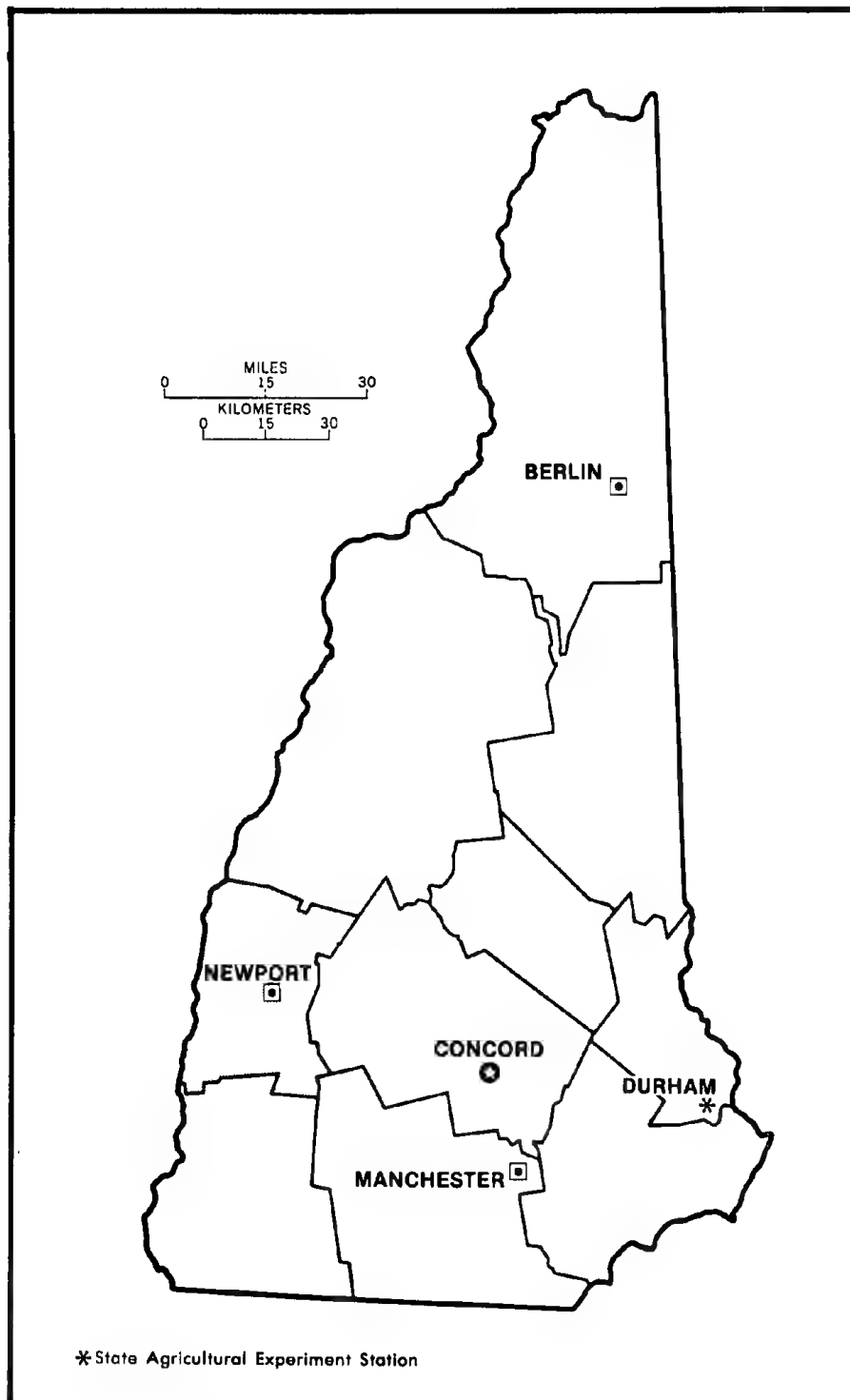
This soil survey is designed for many different users. Farmers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to insure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Soil Conservation Service or the Cooperative Extension Service.



Richard L. Porter
State Conservationist
Soil Conservation Service



Location of Sullivan County in New Hampshire.

soil survey of Sullivan County, New Hampshire

By Roy A. Shook Jr., Soil Conservation Service

Fieldwork by Gary S. Domian, Stephen H. Gourley, Roy A. Shook Jr.,
Carl E. Dellinger, and Richard W. Diers, Soil Conservation Service

United States Department of Agriculture, Soil Conservation Service
in cooperation with the
New Hampshire Agricultural Experiment Station

SULLIVAN COUNTY is in the southwestern part of New Hampshire. The county has an area of about 344,768 acres, or 539 square miles. Newport, the county seat, is near the center of the county.

Hills and mountains make up about 90 percent of the county. The rest of the county, which contains the major population centers and most of the larger farms, is mainly terraces and plains in the valleys of the Connecticut, Sugar, and Cold Rivers.

The soils in the county on the hills and on the lower parts of mountains dominantly are gently sloping to very steep, poorly drained to well drained, and loamy. Stones and boulders are on most areas of these soils.

The soils on the tops of the mountains and high hills commonly are shallow to bedrock. Complex slope patterns, stones and boulders on the surface, shallow depth to bedrock, a high water table, and a hazard of erosion are major limitations of those soils for most types of farm and nonfarm use.

The soils in the major stream valleys are dominantly excessively drained to poorly drained, nearly level to very steep, and loamy and sandy. Those soils that are nearly level to gently sloping, well drained and moderately well drained, and loamy are the major soils for farming.

This soil survey provides updated information to a soil survey of Sullivan County published in 1949 (5), and provides maps that show the soils in greater detail.

The descriptions, names, and boundaries of some of the soils in this survey do not agree with those of

adjacent soils in the soil survey of Merrimack County (6). The differences are the result of changes and advancements in the methods of soil classification and in the intensity of mapping between counties.

general nature of the survey area

This section provides general information about Sullivan County and describes some of the natural and cultural factors that affect land use in the county.

history and population trends

The first permanent settlement in the survey area was established in 1750 at Charlestown. In 1771 what is now New Hampshire was divided into five counties and Sullivan County was part of Cheshire County. In 1827 fifteen towns in the northern part of Cheshire County were incorporated to form Sullivan County.

From 1750 to 1820, the population of the survey area was dominantly rural and most of the people were involved in farming. Between 1820 and 1850, the population remained stable and industrial mills, powered mainly by water supplies from the Sugar River, began operation in the county.

The rural population of the county began to decline after 1850. The towns of Claremont, Newport, and Charlestown began to grow and prosper as a result of the Industrial Revolution, and by the early 1900's the

majority of the population was in urban areas. In 1970 about 60 percent of the people lived in the urban areas.

climate

Prepared by the National Climatic Center, Asheville, North Carolina.

Precipitation in Sullivan County is well distributed throughout the year. From late fall to early spring, the precipitation is typically in the form of snow. In most years the ground is covered with snow throughout this period. Rainfall in the growing season is normally adequate for the commonly grown crops, except for those on soils that are shallow to bedrock and those that are on excessively drained, sandy and gravelly soils with very low available water capacity.

Local differences in climate within the county are the result of differences in topography. The more mountainous areas are, on the average, slightly cooler and receive a higher amount of precipitation than do the lower lying hills and valleys. In the Connecticut River Valley area, the growing season is somewhat longer than the growing season in the hilly and mountainous part of the county to the east.

Table 1 gives data on temperature and precipitation for the survey area as recorded at Lebanon, New Hampshire, in the period 1951 to 1979. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

In winter the average temperature is 20 degrees F, and the average daily minimum temperature is 9 degrees. The lowest temperature on record, which occurred at Lebanon on January 14, 1957, is -34 degrees. In summer the average temperature is 66 degrees, and the average daily maximum temperature is 79 degrees. The highest recorded temperature, which occurred at Lebanon on June 18, 1957, is 99 degrees.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

Of the total annual precipitation, 19 inches, or 55 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 16 inches. The heaviest 1-day rainfall during the period of record was 3.77 inches at Lebanon on July 29, 1969. Thunderstorms occur on about 20 days each year, and most occur in summer.

Average seasonal snowfall is 76 inches. The greatest snow depth at any one time during the period of record was 60 inches. On an annual average of 61 days, at

least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 60 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the northwest. Average windspeed is highest, 8 miles per hour, in spring.

drainage

Nearly all of Sullivan County lies in the Connecticut River drainage basin. The Connecticut River flows south along the entire western boundary of the county. The major tributary in the county to the Connecticut River is the Sugar River. The Sugar River watershed drains about two-thirds of the county. The southern part of the county is drained by the Ashuelot and Cold Rivers, which flow into the Connecticut River south of the county. The extreme eastern part of the towns of Washington and Springfield lie within the drainage basin of the Merrimack River.

farming

In 1978 there were 179 farms in Sullivan County covering 47,665 acres. Of the 179 farms, 80 farm operators listed farming as their principal occupation. The majority of the full-time farms were dairy farms. Of the total farm acreage, 10,400 acres was in cropland; 4,695 acres in pasture; 30,733 acres in woodland; and 1,837 acres in farmsteads, buildings, roads, and other uses.

The major crops grown in the county, in terms of acreage planted, are hay and silage corn used as feed for dairy cows. Other locally important crops are apples and other small fruits, vegetables, and Christmas trees.

The number of dairy farms in the county stabilized in the 1970's while other types of farming increased slightly. The other types are veal and beef operations, sheep, poultry, and replacement milk cows.

The county also showed an increase in the number of vegetable and small fruit farms for the fresh produce or pick-your-own markets. Many farmers supplement their income by producing maple sugar and syrup, and for a few it is a primary source of income.

forestry

Much of the original forest in the county was cleared for farming in the early 1800's, primarily for pasture. When farming declined after 1850 most of the abandoned land reverted to forestland.

In 1980 about 282,000 acres, or 82 percent of the county, was forest. The bulk of this is privately owned. A few State-owned parcels are in the county, the largest of which are the Gile State Forest in the town of Springfield

and the Pillsbury State Park in the towns of Washington and Goshen.

The forests in the county support a wide variety of industries, including the production of lumber and the manufacturing of furniture. The use of the forests for firewood increased substantially in the 1970's. The forests are also used for low-intensity recreational purposes such as hunting, hiking, cross country skiing, and snowmobiling.

transportation and industry

Sullivan County is serviced by a system of State and local highways and by one major rail line. Interstate highway 89 runs across the northeastern part of the county. Interstate highway 91, just across the state line in Vermont, services the western part of the county. These interstate highways are the county's major access routes to the population centers of the northeast. A major rail line runs through the Connecticut River Valley. Junctions with local feeder railroads are in Charlestown and Claremont. Sullivan County has no scheduled commercial airline facilities, but an airport is 5 miles north of Sullivan County in the City of Lebanon.

The manufacturing of precision machine parts, mining equipment, and textiles are major industries in the county. Other important industries include the production of leather goods, finished paper products, optical products, firearms, lumber, and furniture. Most of the industries are in the City of Claremont and the towns of Newport and Charlestown.

how this survey was made

Soil scientists made this survey to learn what soils are in the survey area, where they are, and how they can be used. They observed the steepness, length, and shape of slopes; the size of streams and the general pattern of drainage; the kinds of native plants or crops; and the

kinds of rock. They dug many holes to study soil profiles. A profile is the sequence of natural layers, or horizons, in a soil. It extends from the surface down into the parent material, which has been changed very little by leaching or by plant roots.

The soil scientists recorded the characteristics of the profiles they studied and compared those profiles with others in nearby counties and in more distant places. They classified and named the soils according to nationwide uniform procedures. They drew the boundaries of the soils on aerial photographs. These photographs show trees, buildings, fields, roads, and other details that help in drawing boundaries accurately. The soil maps at the back of this publication were prepared from aerial photographs.

The areas shown on a soil map are called map units. Most map units are made up of one kind of soil. Some are made up of two or more kinds. The map units in this survey area are described under "General soil map units" and "Detailed soil map units."

While a soil survey is in progress, samples of some soils are taken for laboratory measurements and for engineering tests. All soils are field tested to determine their characteristics. Interpretations of those characteristics may be modified during the survey. Data are assembled from other sources, such as test results, records, field experience, and state and local specialists. For example, data on crop yields under defined management are assembled from farm records and from field or plot experiments on the same kinds of soil.

But only part of a soil survey is done when the soils have been named, described, interpreted, and delineated on aerial photographs and when the laboratory data and other data have been assembled. The mass of detailed information then needs to be organized so that it can be used by farmers, woodland managers, engineers, planners, developers and builders, home buyers, and others.

general soil map units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, a map unit consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one unit can occur in other units but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

soil descriptions

1. Windsor-Unadilla Variant-Agawam

Deep, nearly level to very steep, excessively drained and well drained, sandy and loamy soils formed in glacial outwash deposits

This unit is on long and narrow plains and terraces that roughly parallel the Connecticut River. The landscape consists of three abrupt levels: (1) a low flood plain adjacent to the Connecticut River; (2) a higher silty and very fine sandy terrace; (3) a still higher sand terrace.

This unit makes up about 4 percent of the county. The unit is about 34 percent Windsor soils, 11 percent Unadilla Variant soils, 10 percent Agawam soils and 45 percent minor soils (fig. 1).

The Windsor soils are excessively drained and sandy. They are on the highest terrace on the landscape. The top of the terrace is nearly level, and the sides are steep to very steep.

The Unadilla Variant soils are well drained and loamy. They are on the top and sides of the middle terrace. The top of the terrace is nearly level, and the sides are steep to very steep.

The Agawam soils are well drained and loamy. They are on the top of the middle terrace near the Unadilla Variant soils. The top of the terrace is nearly level.

The dominant minor soils of this unit are well drained Hadley and Haven soils; moderately well drained Winooski, Scio, and Ninigret soils; and poorly drained Raynham and Limerick soils. The Hadley, Winooski, and Limerick soils are on low-lying flood plains near the Connecticut River. The Scio, Ninigret, and Raynham soils are primarily in broad, low-lying depressions and in shallow drainageways within areas of the Unadilla Variant and Agawam soils. The Haven soils are on the higher terraces near the Agawam and Windsor soils.

Much of the acreage of this unit, particularly the Agawam and Unadilla Variant soils, is used for crops. The Windsor soils are droughty and are not used extensively for crops; they are wooded or in urban development. The less sloping areas of the Windsor and Agawam soils are favorable for most types of community development. Ground-water pollution in areas used for septic systems is a hazard of the Windsor and Agawam soils.

The soils in this unit are susceptible to erosion, particularly gully erosion. Many deep gullies have cut into the terrace edges. Control of runoff is a major concern. Erosion-control measures are essential for most types of farm and nonfarm use.

2. Bernardston-Cardigan-Kearsarge-Dutchess

Deep, moderately deep, and shallow, gently sloping to very steep, well drained and somewhat excessively drained, loamy soils formed in glacial till

This unit is on upland hills dissected by numerous small streams and waterways. Many areas of this unit have stones on the surface, and rock outcrops are common on the higher hills.

This unit makes up about 20 percent of the county. The unit is about 16 percent Bernardston soils, 14 percent Cardigan soils, 13 percent Kearsarge soils, 12 percent Dutchess soils, and 45 percent minor soils.

The Bernardston soils are deep and well drained. They have a dense, slowly permeable layer at a depth of 15 to 30 inches. They are mostly on smooth, oval hills and on the upper part of long and smooth, north- and west-facing hillsides.

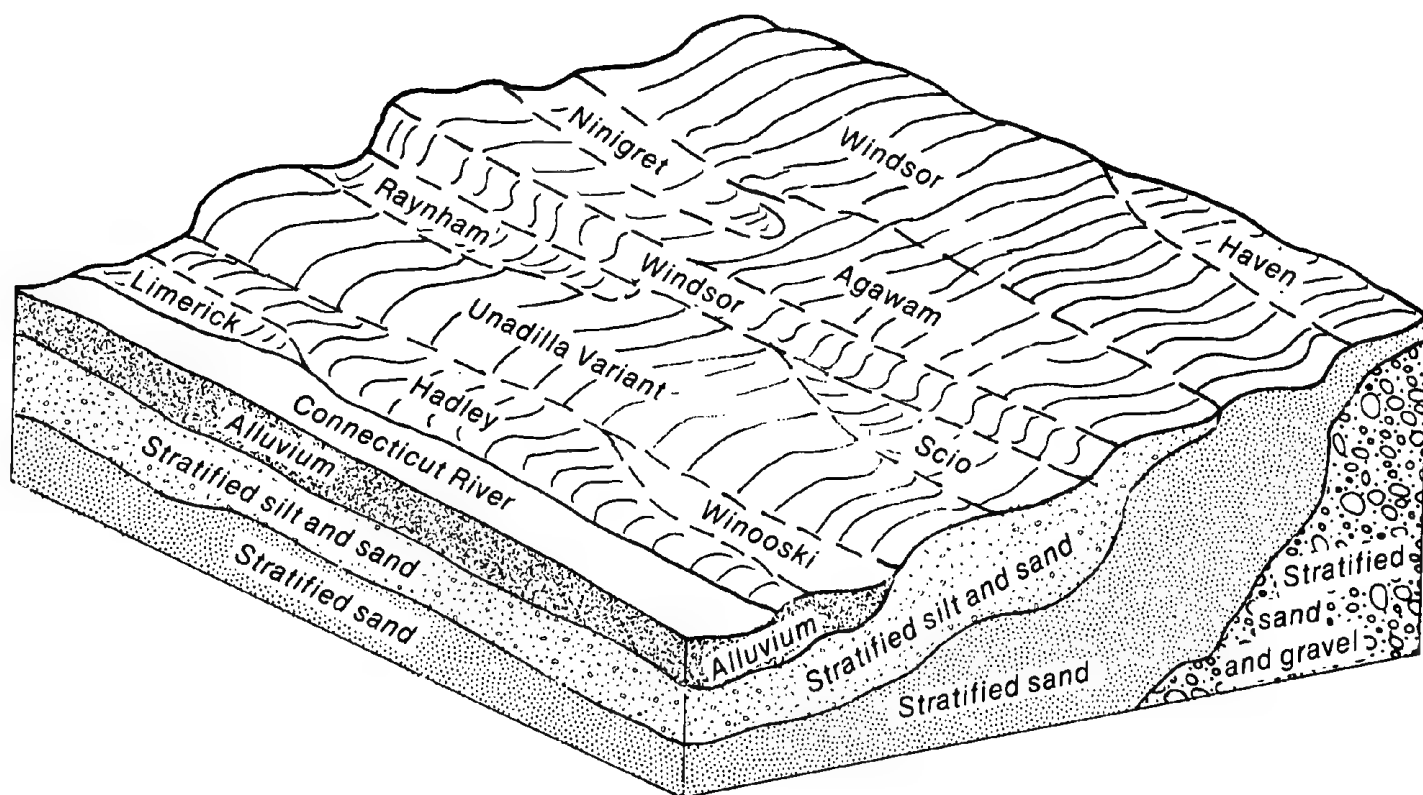


Figure 1.—Typical pattern of soils and underlying material in the Windsor-Unadilla Variant-Agawam unit.

The Cardigan soils are moderately deep and well drained. They are 20 to 40 inches deep to bedrock. They are on the tops and sides of hills and are intermingled with the Kearsarge soils.

The Kearsarge soils are shallow and somewhat excessively drained. They are 10 to 20 inches deep to bedrock. They are on the tops and sides of higher hills and are intermingled with the Cardigan soils.

The Dutchess soils are deep and well drained. They are mostly on south- and east-facing sides of hills.

The dominant minor soils in this unit are moderately well drained Pittstown soils, poorly drained Stissing and Lyme soils, poorly drained to somewhat poorly drained Moosilauke soils, somewhat excessively drained Lyman soils, and well drained Monadnock soils. The Pittstown soils are in broad, slightly depressional areas and on lower north- and west-facing foot slopes. The Stissing and Lyme soils and the Moosilauke soils are in low-lying depressions and in shallow drainageways. The Lyman and Monadnock soils are on small ridges at the tops of higher hills. Also included are small areas of rock outcrop on ridgetops and on the steeper sides of hills and ridges.

Much of the acreage of this unit is covered by forests

of mixed hardwoods and conifers. Some areas are used for farming, mainly for hay and pasture. The farmland is dominantly on the less sloping Bernardston and Dutchess soils. Slope, stones on the surface, areas of rock outcrop, depth to bedrock, and a hazard of erosion are the major limitations of the soils of this unit for most types of farm and nonfarm use.

3. Colton-Adams-Rumney

Deep, nearly level to very steep, excessively drained and poorly drained, loamy and sandy soils formed in glacial outwash deposits and alluvium

This unit is on long and narrow terraces, kames, and plains that roughly parallel the major streams.

This makes up about 5 percent of the county. The unit is about 30 percent Colton soils, 18 percent Adams soils, 12 percent Rumney soils, and 40 percent minor soils (fig. 2).

The Colton soils are excessively drained and sandy and gravelly, and formed in thick, stratified glacial outwash deposits. They are on high terraces and kames. The tops of the terraces are nearly level, and the sides are steep to very steep. The kames are moderately steep.

The Adams soils are excessively drained and sandy, and formed in thick, stratified glacial outwash deposits. They are on high terraces. The tops of the terraces are nearly level, and the sides are steep to very steep.

The Rumney soils are poorly drained and loamy, and formed in thick alluvial deposits. They are on low-lying flood plains.

The dominant minor soils in this unit are moderately well drained Croghan and Podunk soils, poorly drained and somewhat poorly drained Naumburg soils, well drained Haven and Ondawa soils, and very poorly drained Saco Variant soils. The Croghan and Naumburg soils are in depressions and drainageways within areas of the Adams and Colton soils. The Haven soils are on

mounds and terraces near the Adams soils. The Ondawa and Podunk soils are on higher areas of the flood plains near the Rumney soils. The Saco Variant soils are on low areas of the flood plains near the Rumney soils.

Much of the acreage of this unit is wooded. Some areas are used for farming, mainly for hay and pasture. A sizeable acreage of this unit is in urban areas. Droughtiness of the Adams and Colton soils and wetness and the flood hazard of the Rumney soils are major limitations of the unit for farming. The less sloping areas of the Adams and Colton soils are favorable for most urban uses. Ground-water pollution from septic sewage systems is a hazard in the Adams and Colton

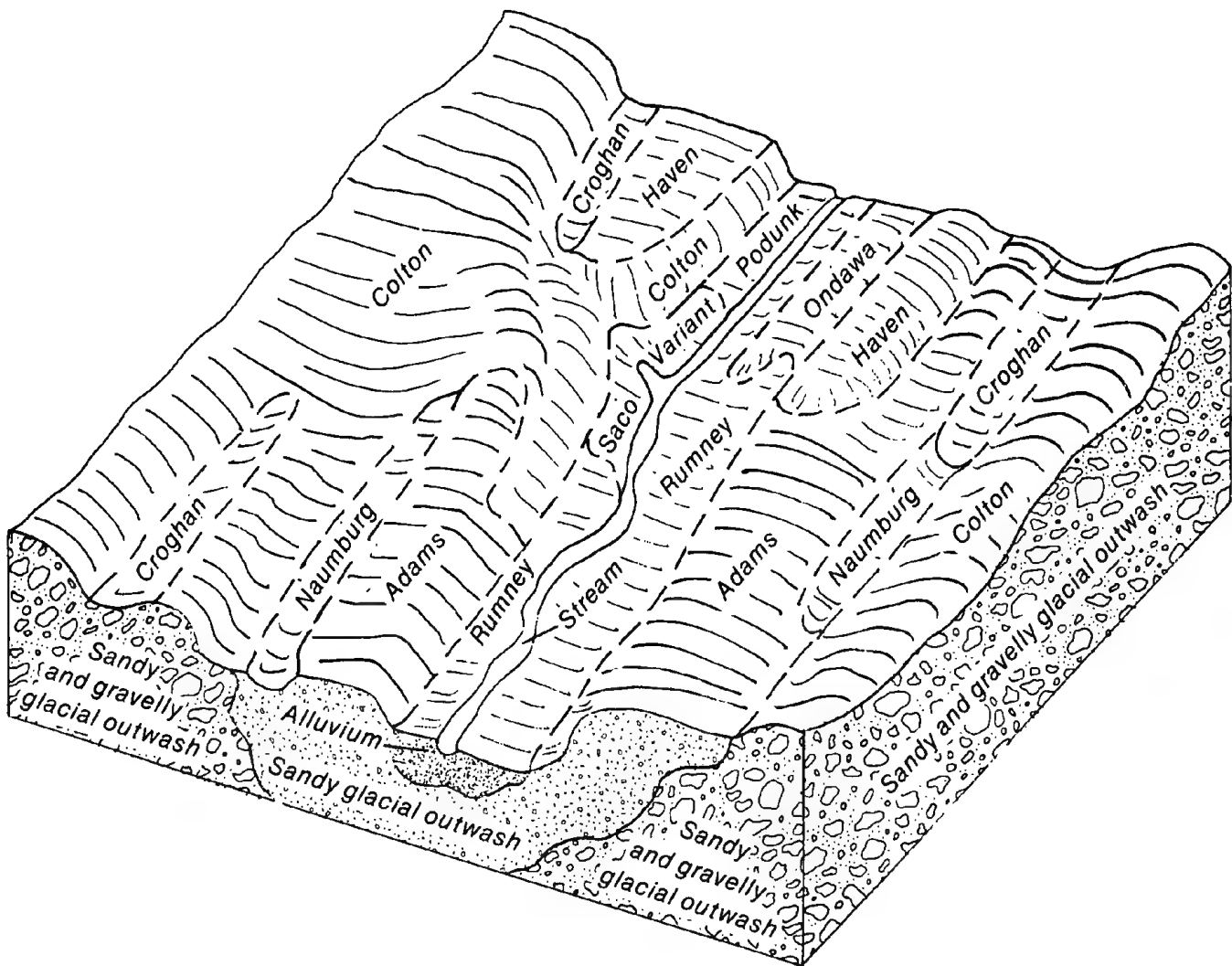


Figure 2.—Typical pattern of soils and underlying material in the Colton-Adams-Rumney unit.

soils. Wetness and the hazard of flooding are limitations of the Rumney soils for most types of urban use.

4. Monadnock-Marlow-Lyman

Deep and shallow, gently sloping to very steep, well drained and somewhat excessively drained, loamy soils formed in glacial till

This unit is on long, narrow ridges and oval, smooth hills. Typically, the south- and east-facing sides of the hills and ridges are steeper than the north- and west-facing sides. This unit is dissected by numerous small streams and waterways. Most areas of the unit have stones on the surface, and rock outcrops are common on ridgetops and the steeper sides of hills and ridges.

This unit makes up about 24 percent of the county.

The unit is about 27 percent Monadnock soils, 19 percent Marlow soils, 14 percent Lyman soils, and 40 percent minor soils (fig. 3).

The Monadnock soils are deep and well drained. They are mostly on south- and east-facing sides of hills and ridges; some areas are intermingled with the Lyman soils on the tops and sides of ridges.

The Marlow soils are deep and well drained. They have a dense, slowly permeable layer at a depth of 15 to 36 inches. They are mostly on smooth, oval hills and on long, smooth, north- and west-facing hillsides.

The Lyman soils are shallow and somewhat excessively drained. They are 8 to 20 inches deep to bedrock. They are mostly on ridgetops and steeper sides of ridges and are intermingled with the Monadnock soils and areas of rock outcrop.

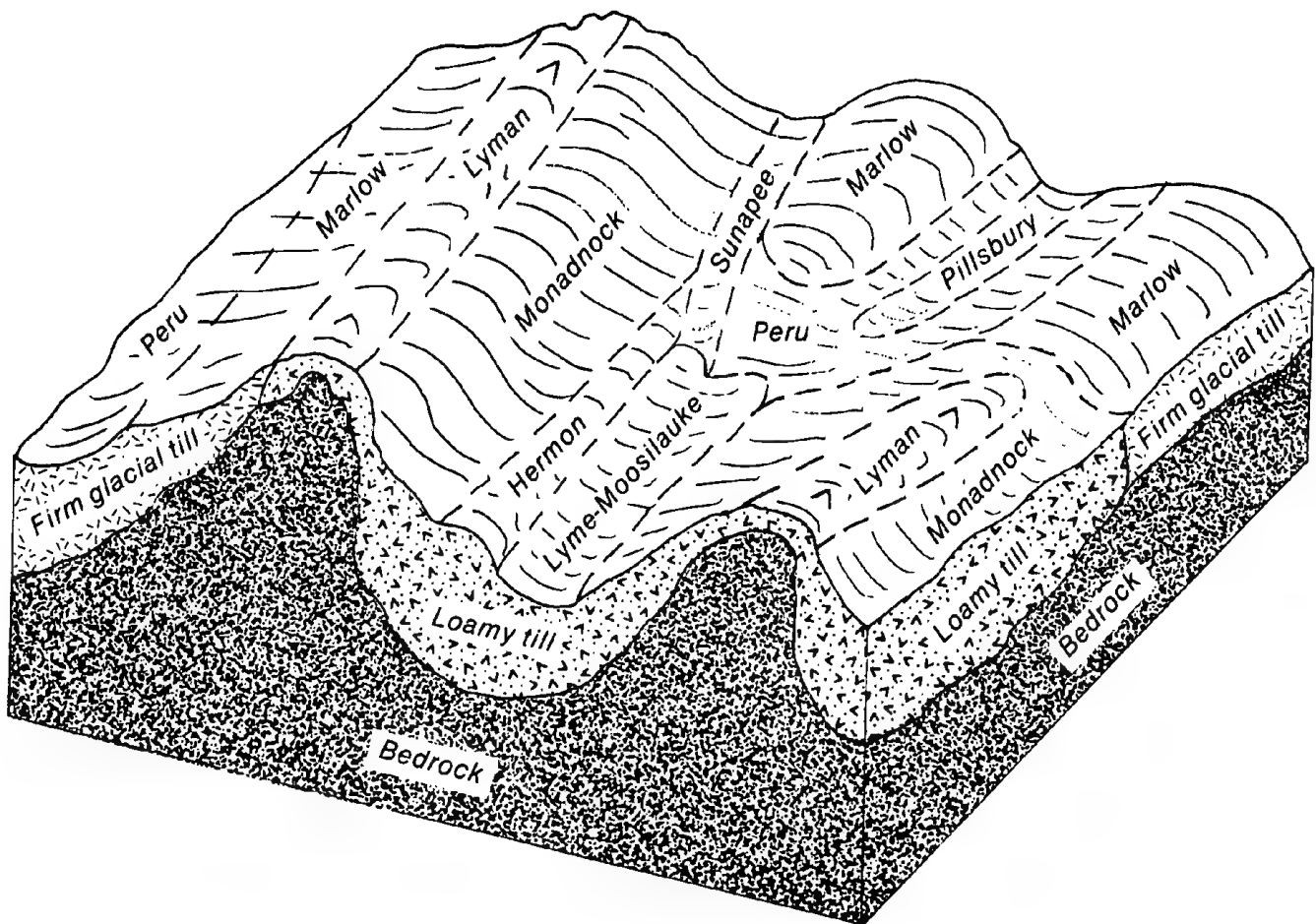


Figure 3.—Typical pattern of soils and underlying material in the Monadnock-Marlow-Lyman unit.

The dominant minor soils in this unit are somewhat excessively drained to well drained Hermon soils, moderately well drained Peru and Sunapee soils, poorly drained to somewhat poorly drained Pillsbury and Moosilauke soils, and poorly drained Lyme soils. The Hermon soils are dominantly on hummocky lower sides of hills and ridges. The Peru soils are in broad slightly depressional areas and on lower north- and west-facing foot slopes. The Sunapee soils are in drainageways and on lower south- and east-facing foot slopes. The Pillsbury, Moosilauke, and Lyme soils are in low-lying depressions and in shallow drainageways. Also included are areas of rock outcrop on ridgetops and on steeper sides of hills and ridges.

Most of the acreage of this unit is covered by forests of mixed hardwoods and conifers. Scattered throughout this unit are areas that have been cleared of stones and used primarily for hay and pasture. These areas are common on the Marlow soils. Slope, stones on the surface, depth to bedrock, and a hazard of erosion are major limitations of the soils of this unit for most types of farm and nonfarm use.

5. Monadnock-Lyman-Rock outcrop

Deep and shallow, moderately steep to very steep, well drained and somewhat excessively drained, loamy soils formed in glacial till

This unit is mainly on mountains. Areas of rock outcrop and surface stones and boulders are prominent on the landscape.

This unit makes up about 9 percent of the county. The unit is about 33 percent Monadnock soils, 23 percent Lyman soils, 20 percent areas of rock outcrop, and 24 percent minor soils.

The Monadnock soils are deep and well drained. They are mostly intermingled with the Lyman soils and areas of rock outcrop on the sides and tops of mountains.

The Lyman soils are shallow and somewhat excessively drained. They are 8 to 20 inches deep to bedrock. They are intermingled with the Monadnock soils and areas of rock outcrop on mountains.

The dominant minor soils in this unit are somewhat excessively drained to well drained Hermon soils, well drained Marlow soils, moderately well drained Peru and Sunapee soils, poorly drained Lyme soils, and poorly drained to somewhat poorly drained Moosilauke soils. The Hermon soils are on the lower slopes of mountainsides. The Marlow and Peru soils are on north-facing side slopes. The Sunapee, Lyme, and Moosilauke soils are in drainageways and depressions.

Most of the acreage of this unit is covered by forests

of conifers. Slope, the areas of rock outcrop, the depth to bedrock, stones and boulders on the surface, and a hazard of erosion are major limitations of the soils for farm and nonfarm use.

6. Monadnock-Marlow-Hermon

Deep, gently sloping to very steep, well drained and somewhat excessively drained, loamy and sandy soils formed in glacial till

This unit is on hills and ridges dissected by numerous small streams and waterways. Typically, the south- and east-facing sides of the hills and ridges are steeper than the north- and west-facing sides. Most areas of this unit have stones on the surface, and rock outcrops are common on the ridgetops and the steeper sides of the ridges.

This unit makes up about 38 percent of the county. The unit is about 26 percent Monadnock soils, 18 percent Marlow soils, 11 percent Hermon soils, and 45 percent minor soils (fig. 4).

The Monadnock soils are well drained and loamy. They are mostly on the south- and east-facing sides of the hills and are commonly intermingled with the Hermon soils.

The Marlow soils are well drained and loamy. They have a dense, slowly permeable layer at a depth of 15 to 36 inches. They are mostly on smooth, oval hills and on long, smooth, north- and west-facing hillsides.

The Hermon soils are somewhat excessively drained to well drained and are sandy. They are on hummocky lower sides of hills and ridges and are intermingled with the Monadnock soils on steep hillsides.

The dominant minor soils in this unit are moderately well drained Peru and Sunapee soils, somewhat excessively drained Lyman soils, poorly drained Lyme soils, poorly drained to somewhat poorly drained Pillsbury and Moosilauke soils. The Peru soils are in broad, slightly depressional areas and on the lower north- and west-facing foot slopes. The Lyman soils are on ridgetops and steeper ridge sides. The Sunapee soils are in drainageways and on the lower south- and east-facing foot slopes. The Pillsbury and Moosilauke soils and the Lyme soils are in low-lying depressions and in shallow drainageways.

Most of the acreage of this unit is covered by forests of mixed hardwoods and conifers. Scattered throughout this unit are areas that have been cleared of surface stones and are used primarily for hay and pasture. These areas are common on the Marlow soils. Slope, droughtiness, surface stones, and a hazard of erosion are major limitations of the soils for most types of farm and nonfarm use.

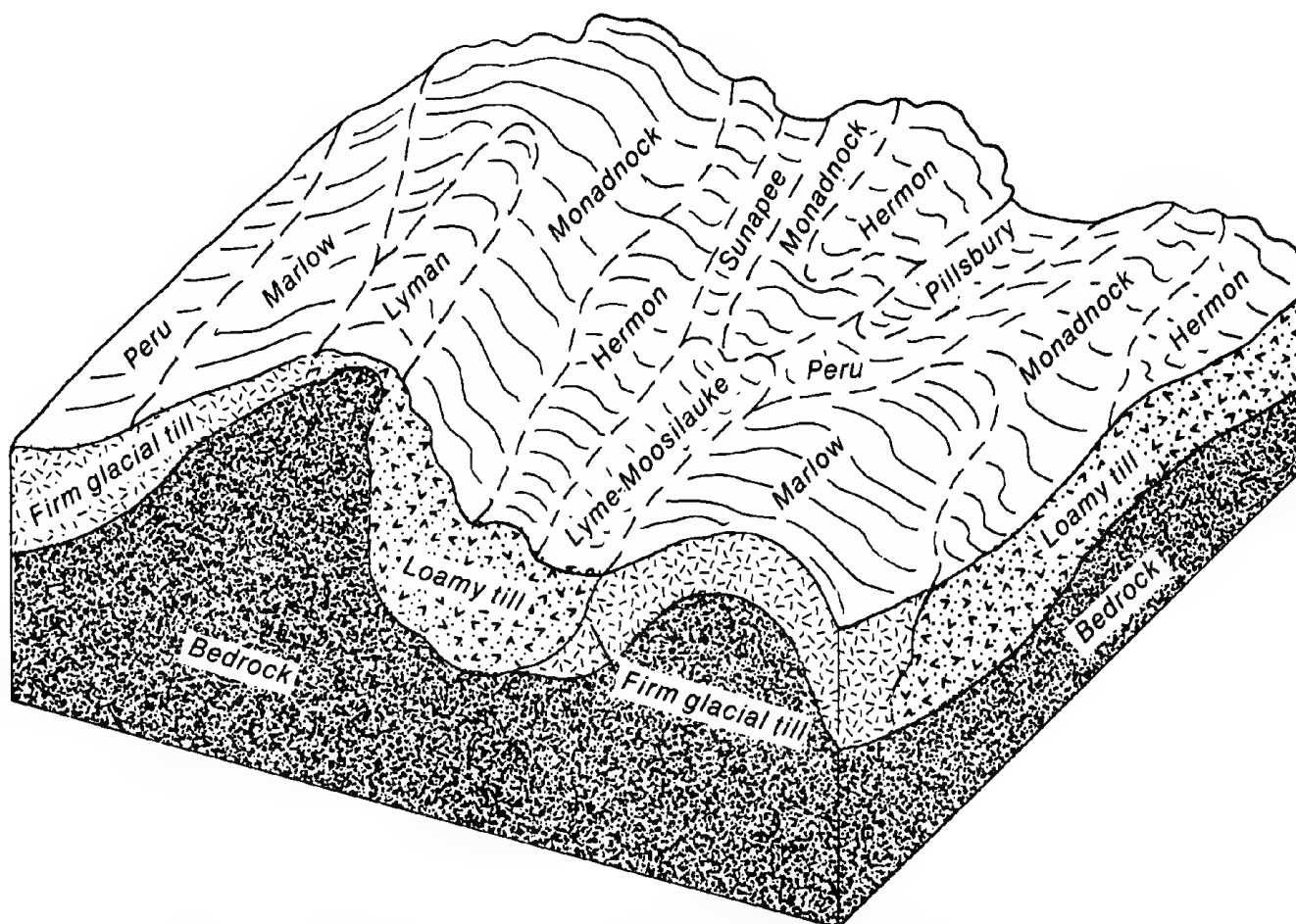


Figure 4.—Typical pattern of soils and underlying material in the Monadnock-Marlow-Hermon unit.

detailed soil map units

The map units on the detailed soil maps at the back of this survey represent the soils in the survey area. The map unit descriptions in this section, along with the soil maps, can be used to determine the suitability and potential of a soil for specific uses. They also can be used to plan the management needed for those uses. More information on each map unit, or soil, is given under "Use and management of the soils."

Each map unit on the detailed soil maps represents an area on the landscape and consists of one or more soils for which the unit is named.

A symbol identifying the soil precedes the map unit name in the soil descriptions. Each description includes general facts about the soil and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer or of the underlying material, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer or of the underlying material. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, *Marlow loam, 3 to 8 percent slopes*, is one of several phases in the Marlow series.

Some map units are made up of two or more major soils. These map units are called soil complexes, soil associations, or undifferentiated groups.

A *soil complex* consists of two or more soils in such an intricate pattern or in such small areas that they cannot be shown separately on the soil maps. The pattern and proportion of the soils are somewhat similar in all areas. *Monadnock-Lyman stony fine sandy loams, 8 to 15 percent slopes*, complex is an example.

A *soil association* is made up of two or more geographically associated soils that are shown as one unit on the maps. Because of present or anticipated soil uses in the survey area, it was not considered practical or necessary to map the soils separately. The pattern and relative proportion of the soils are somewhat similar.

Monadnock-Hermon association, extremely bouldery, moderately steep, is an example.

Most map units include small scattered areas of soils other than those for which the map unit is named. Some of these included soils have properties that differ substantially from those of the major soil or soils. Such differences could significantly affect use and management of the soils in the map unit. The included soils are identified in each map unit description. Some small areas of strongly contrasting soils are identified by a special symbol on the soil maps.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. *Rock outcrop*, is an example. Miscellaneous areas are shown on the soil maps. Some that are too small to be shown are identified by a special symbol on the soil maps.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils.

soil descriptions

AdA—Adams loamy sand, 0 to 3 percent slopes.

This soil is nearly level and excessively drained. It is on the tops of terraces and on outwash plains. The areas typically are oval and range from 5 to 50 acres.

Typically a thin layer of decomposed leaves, needles, and twigs covers the surface of this soil. The surface layer is gray loamy sand about 3 inches thick. The upper part of the subsoil is very dusky red, reddish brown, and brown loamy sand 6 inches thick. The lower part of the subsoil is yellowish brown and light olive brown sand 9 inches thick. The substratum is olive, light olive gray, and pale olive sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Colton soils. Also included are small areas of Croghan soils in low spots. Included soils make up about 20 percent of this unit.

This Adams soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity, organic matter content, and natural fertility are low. The depth to

bedrock is generally more than 5 feet. Potential frost action is low.

Much of the acreage of this soil is wooded, but potential productivity is low for most tree species because of droughtiness. Most of the cleared acreage of this soil is used for hay or pasture. Some areas are used for residential and industrial development.

This soil is fairly suited to hay and pasture. It is poorly suited to cultivated crops because of droughtiness and low fertility. Adding fertilizer and lime helps to improve fertility, and using manure and crop residue helps to improve tilth and available water capacity.

The very rapid permeability causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields, and is the main limitation of the soil for community development.

Capability subclass: IIIs.

AdB—Adams loamy sand, 3 to 8 percent slopes.

This soil is gently sloping and excessively drained. It is on the tops of terraces and on outwash plains. The areas typically are oval and range from 5 to 50 acres.

Typically a thin layer of decomposed leaves, needles, and twigs covers the surface of this soil. The surface layer is gray loamy sand about 3 inches thick. The upper part of the subsoil is very dusky red, reddish brown, and brown loamy sand 6 inches thick. The lower part of the subsoil is yellowish brown and light olive brown sand 9 inches thick. The substratum is olive, light olive gray, and pale olive sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Colton soils. Also included are small areas of Croghan soils in low spots. Included soils make up about 20 percent of this unit.

This Adams soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity, organic matter content, and natural fertility are low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Much of the acreage of this soil is wooded, but potential productivity is low for most tree species because of droughtiness. Most of the cleared acreage of this soil is used for hay or pasture. Some areas are used for residential and industrial development.

This soil is fairly suited to hay and pasture. It is poorly suited to cultivated crops because of droughtiness and low fertility. Adding fertilizer and lime helps to improve fertility, and using manure and crop residue helps to improve tilth and available water capacity.

The very rapid permeability causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields, and is the main limitation of the soil for community development.

Capability subclass: IIIs.

AdC—Adams loamy sand, 8 to 15 percent slopes.

This soil is sloping and excessively drained. It is on the sides of terraces and on plains. The areas typically are long and narrow and range from 10 to 50 acres.

Typically a thin layer of decomposed leaves, needles, and twigs covers the surface of this soil. The surface layer is gray loamy sand about 3 inches thick. The upper part of the subsoil is very dusky red, reddish brown, and brown loamy sand 6 inches thick. The lower part of the subsoil is yellowish brown and light olive brown sand 9 inches thick. The substratum is olive, light olive gray, and pale olive sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Colton soils and scattered spots of soils that have stones on the surface. Included soils make up about 20 percent of this unit.

This Adams soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity, organic matter content, and natural fertility are low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is wooded, but potential productivity is low for most tree species because of droughtiness. Droughtiness, slope, and an erosion hazard make the soil poorly suited to hay and pasture and generally unsuited to cultivated crops.

Slope and the very rapid permeability of the substratum are the main limitations of the soil for community development. Slope limits the soil as a building site, and the permeability causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IVs.

AdE—Adams loamy sand, 15 to 50 percent slopes.

This soil is moderately steep to very steep and is excessively drained. It is on the sides of terraces and plains and on kames. The areas typically are long and narrow and range from 20 to 100 acres.

Typically a thin layer of decomposed leaves, needles, and twigs covers the surface of this soil. The surface layer is gray loamy sand about 3 inches thick. The upper part of the subsoil is very dusky red, reddish brown, and brown loamy sand 6 inches thick. The lower part of the subsoil is yellowish brown and light olive brown sand 9 inches thick. The substratum is olive, light olive gray, and pale olive sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Colton soils and scattered spots of soils that have stones on the surface. Included soils make up about 20 percent of this unit.

This Adams soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity, organic matter

content, and natural fertility are low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Nearly all of the acreage of this soil is wooded, but potential productivity is low for most tree species because of droughtiness. Slope limits the use of equipment for woodland management.

Slope makes the soil generally unsuited to farming and is the main limitation for community development.

Capability subclass: VIIs.

AgA—Agawam very fine sandy loam, 0 to 3 percent slopes. This soil is nearly level and well drained. It is on plains and terraces in major stream valleys, commonly in the Connecticut River Valley. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres.

Typically, the surface layer is very dark grayish brown very fine sandy loam about 8 inches thick. The upper part of the subsoil is dark yellowish brown and light olive brown very fine sandy loam about 16 inches thick. The lower part of the subsoil is olive loamy very fine sand about 12 inches thick. The substratum is stratified light olive brown, olive, and olive gray loamy sand and sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small low areas of Ninigret soils and spots of Unadilla Variant soils. Included soils make up about 15 percent of this unit.

This Agawam soil has moderately rapid permeability in the surface layers and subsoil and rapid permeability in the substratum. Available water capacity is moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is used for hay, pasture, or cultivated crops. A few areas are wooded, and potential productivity is moderately high for most tree species.

This soil is well suited to hay, pasture, cultivated crops, and truck crops. Crops respond well to lime and fertilizer.

The rapid permeability in the substratum causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields, and is the main limitation for community development.

Capability class: I.

AgB—Agawam very fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on plains and terraces in the major stream valleys, commonly in the Connecticut River Valley. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres.

Typically, the surface layer is very dark grayish brown very fine sandy loam about 8 inches thick. The upper part of the subsoil is dark yellowish brown and light olive brown very fine sandy loam about 16 inches thick. The lower part of the subsoil is olive loamy very fine sand

about 12 inches thick. The substratum is stratified light olive brown, olive, and olive gray loamy sand and sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small low areas of Ninigret soils and spots of Unadilla Variant soils. Included soils make up about 15 percent of this unit.

This Agawam soil has moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. Available water capacity is moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is used for hay, pasture, or cultivated crops. A few areas are wooded, and potential productivity is moderately high for most tree species.

This soil is well suited to hay, pasture, and cultivated crops and has fair suitability for truck crops. Crops respond well to lime and fertilizer. This soil is subject to erosion if used for truck or cultivated crops. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping systems help to reduce the hazard of erosion.

The rapid permeability in the substratum causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields, and is the main limitation for community development.

Capability class: I.

BdB—Bernardston silt loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the crests of smooth, rounded hills. The areas typically are rectangular and range from 10 to 30 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is olive brown and light olive brown silt loam about 21 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess soils. Also included are small areas of Pittstown and Stissing soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. Most of the cleared acreage is used for hay or pasture. A few areas are used for cultivated crops.

This soil is well suited to hay, pasture, and apple orchards. It is less suited to cultivated crops because of slope and an erosion hazard. Stripcropping, contour

plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas. The water table in the spring can hamper or delay tillage and haying.

The main limitations of this soil for community development are the slow permeability in the substratum, the seasonal perched water table, and the moderate frost-action potential.

Capability subclass: IIe.

BdC—Bernardston silt loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the sides of smooth, rounded hills and on the lower smooth side slopes of hilly uplands. The areas typically are rectangular and range from 10 to 40 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is olive brown and light olive brown silt loam about 21 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess soils. Also included are small areas of Pittstown and Stissing soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. Most of the cleared acreage is used for hay or pasture. A few areas are used for cultivated crops.

This soil is suited to hay, pasture, and apple orchards. It is poorly suited to cultivated crops because of slope and an erosion hazard. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas. The water table in the spring can hamper or delay tillage or haying.

Slope, the slow permeability in the substratum, the seasonal perched water table, and the moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: IIIe.

BdD—Bernardston silt loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on the sides of smooth, rounded hills and on the smooth side slopes of hilly uplands. The areas typically are rectangular and range from 10 to 40 acres.

Typically, the surface layer is dark grayish brown silt loam about 8 inches thick. The subsoil is olive brown

and light olive brown silt loam about 21 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess soils. Also included are small areas of Pittstown soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. A few areas are used for hay or pasture, but slope and a severe erosion hazard make the soil poorly suited to hay and pasture and unsuited to cultivated crops.

Slope, the slow permeability in the substratum, the seasonal perched water table, and the moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: IVe.

BeB—Bernardston stony silt loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the crests of smooth, rounded hills. The areas typically are oval and range from 10 to 70 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and twigs. The surface layer is very dark gray silt loam about 3 inches thick. The subsoil is olive brown and light olive brown silt loam about 24 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess soils. Also included are small areas of Pittstown and Stissing soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. A few acres are used for unimproved pasture, but the stones on the surface make this soil unsuited to cultivated crops and poorly suited to hay and pasture.

The stones on the surface, the seasonal perched water table, the moderate permeability in the substratum, and the moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: VIs.

BeC—Bernardston stony silt loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the sides of smooth, rounded hills and on the lower smooth side slopes of hilly uplands. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and twigs. The surface layer is very dark gray silt loam about 3 inches thick. The subsoil is olive brown and light olive brown silt loam about 24 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess soils. Also included are small areas of Pittstown and Stissing soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. A few acres are used for unimproved pasture, but the stones on the surface make this soil unsuited to cultivated crops and poorly suited to hay and pasture.

The stones on the surface, slope, the slow permeability in the substratum, the seasonal perched water table, and the moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: VIs.

BeD—Bernardston stony silt loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on the sides of smooth, rounded hills and on the smooth side slopes of hilly uplands. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and twigs. The surface layer is very dark gray silt loam about 3 inches thick. The subsoil is olive brown and light olive brown silt

loam about 24 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess soils. Also included are small areas of Pittstown soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Nearly all of the acreage of this soil is wooded. Potential productivity is moderate for most tree species, but slope limits the use of equipment. The soil is unsuited to cultivated crops and poorly suited to hay and pasture crops because of surface stones and moderately steep slope.

The stones on the surface, slope, the slow permeability in the substratum, the seasonal perched water table, and the moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: VIs.

BeE—Bernardston stony silt loam, 25 to 50 percent slopes. This soil is steep to very steep and is well drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 20 to 150 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and twigs. The surface layer is very dark gray silt loam about 3 inches thick. The subsoil is olive brown and light olive brown silt loam about 24 inches thick. The substratum is very firm and dense, olive gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Dutchess, Kearsarge, and Cardigan soils. Also included, mainly near the bottom of the slope, are small areas of Pittstown soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Bernardston soil is moderate in the surface layer and subsoil and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 1.5 to 2 feet. Rooting is impeded by the dense substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Nearly all of the acreage of this soil is wooded. Potential productivity is moderate for most tree species, but slope limits the use of equipment. The soil is

unsuited to cultivated crops and poorly suited to hay and pasture crops because of surface stones and moderately steep slope.

Slope is the major limitation of this soil for community development.

Capability subclass: VIIs.

Bp—Borochemists, ponded. These soils are nearly level and very poorly drained. They are in marshy areas that are covered by shallow water most of the time (fig. 5). These areas are commonly near the edges of lakes and ponds and in low depressions and drainageways. The areas are irregularly shaped and range from 5 to 75 acres.

These soils are variable in composition but consists mostly of layers of very dusky red to black, partially

decomposed organic material that ranges in thickness from 16 inches to more than 60 inches.

Included with these soils in mapping are small areas of shallow water and Greenwood, Chocorua, and Ossipee soils. Also included, particularly near the margins of this unit, are narrow strips of very poorly drained mineral soils. Included soils make up about 20 to 30 percent of this unit.

Most of the acreage of this unit is covered by grasses, reeds, cattails, and sedges and a few stands of red maple and water-tolerant shrubs. The high water table and the instability of the organic material make these soils unsuitable for most uses other than as wetland wildlife habitat or for flood-and storm-water retention areas.

Capability subclass: not assigned.



Figure 5.—An area of Borochemists, ponded.

CaB—Cardigan-Kearsarge silt loams, 3 to 8 percent slopes. This unit is on the tops of hills and ridges. It consists mainly of moderately deep, well drained Cardigan soils and shallow, somewhat excessively drained Kearsarge soils. The areas are oblong and range from 10 to 50 acres. The Cardigan and Kearsarge soils are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils generally are at a slightly higher position than the Cardigan soils.

Cardigan soils make up about 40 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Kearsarge soils make up about 35 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Included with this unit in mapping are spots of very shallow, loamy soils; spots of Dutchess and Bernardston soils; and small areas of loamy soils that are moderately well drained, poorly drained, or somewhat poorly drained. Also included are a few rock outcrops. Included areas make up about 25 percent of this unit.

These Cardigan and Kearsarge soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Much of the acreage of this unit is wooded. Some cleared areas are used for hay or pasture.

An erosion hazard and the depth to bedrock and droughtiness of the Kearsarge soils make this unit poorly suited to cultivated crops.

The potential productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The shallow soil depth and droughtiness of the Kearsarge soils are the major limitations. The construction and location of woodland access roads is restricted by the depth to bedrock.

The depth to bedrock is the main limitation of the soils for community development.

Capability subclass: IIIe.

CaC—Cardigan-Kearsarge silt loams, 8 to 15 percent slopes. This unit is on the tops and sides of hills and ridges. It mainly consists of moderately deep, well drained Cardigan soils and shallow, somewhat

excessively drained Kearsarge soils. The areas typically are long and narrow and range from 10 to 50 acres. The Cardigan and Kearsarge soils are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils generally are at a slightly higher position than the Cardigan soils.

Cardigan soils make up about 40 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Kearsarge soils make up about 35 percent of this complex. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Included with this complex in mapping are spots of very shallow, loamy soils; spots of Dutchess and Bernardston soils; and small areas of loamy soils that are moderately well drained, poorly drained, or somewhat poorly drained. Also included are a few rock outcrops. Included areas make up about 25 percent of this unit.

These Cardigan and Kearsarge soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Much of the acreage of this unit is wooded. Some cleared areas are used for hay or pasture.

An erosion hazard and the depth to bedrock and droughtiness of the Kearsarge soils make this unit poorly suited to cultivated crops.

The potential productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The shallow soil depth and droughtiness of the Kearsarge soils are the major limitations. The construction and location of woodland access roads is restricted by the depth to bedrock.

Slope and the depth to bedrock are the main limitations of the soils for community development.

Capability subclass: IVe.

CaD—Cardigan-Kearsarge silt loams, 15 to 25 percent slopes. This unit is on the sides of hills and ridges. It consists mainly of moderately deep, well drained Cardigan soils and shallow, somewhat excessively drained Kearsarge soils. The areas typically are long and narrow and range from 10 to 100 acres.

The Cardigan and Kearsarge soils are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils generally are at a slightly higher position than the Cardigan soils.

Cardigan soils make up about 40 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Kearsarge soils make up about 35 percent of this complex. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Included with this unit in mapping are spots of very shallow, loamy soils; spots of Dutchess and Bernardston soils; and small areas of loamy soils that are moderately well drained, poorly drained, and somewhat poorly drained. Also included are a few rock outcrops. Included areas make up about 25 percent of this unit.

These Cardigan and Kearsarge soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Most of the acreage of this unit is wooded. A few cleared areas are used for pasture.

Slope and an erosion hazard make these soils generally unsuited to cultivated crops and poorly suited to hay and pasture.

Potential productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The shallow soil depth and droughtiness of the Kearsarge soils are the major limitations. Slope limits the use of equipment, and erosion is a major concern where the Cardigan soils are disturbed by heavy logging equipment. Constructing woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help to control erosion. The construction and location of woodland access roads is restricted by the depth to bedrock and slope.

Slope and the depth to bedrock are the main limitations of these soils for community development.

Capability subclass: VIe.

CbC—Cardigan-Kearsarge-Rock outcrop complex, 8 to 15 percent slopes. This unit is on the tops and

sides of hills and ridges. It consists mainly of moderately deep, well drained Cardigan soils; shallow, somewhat excessively drained Kearsarge soils; and areas of exposed bedrock that make up about 15 percent of the unit. The areas typically are long and narrow and range from 10 to 100 acres. The soils commonly have stones on the surface 1 to 2 feet in diameter and 5 to 30 feet apart. The Cardigan and Kearsarge soils and the areas of exposed rock are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils and areas of exposed rock generally are at slightly higher positions than the Cardigan soils.

Cardigan soils make up about 35 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Kearsarge soils make up about 30 percent of this complex. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Included with this unit in mapping are spots of very shallow, loamy soils; spots of Dutchess and Bernardston soils; and small areas of loamy soils that are moderately well drained, poorly drained, and somewhat poorly drained. Included areas make up about 20 percent of this unit.

These Cardigan and Kearsarge soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Nearly all of the acreage of this unit is wooded. A few areas are used for unimproved pasture.

The stones on the surface and the areas of exposed rock make this unit generally unsuitable for farming. Productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The shallow soil depth and droughtiness of the Kearsarge soils are the major limitations. The stones and exposed rock limit the use of equipment. The construction and location of woodland access roads is restricted by the depth to bedrock and areas of exposed rock.

Slope, the stones and exposed rock on the surface, the depth to bedrock, and the frost-action potential are the main limitations of the soils for community development.

Capability subclass: VIi.

CbD—Cardigan-Kearsarge-Rock outcrop complex, 15 to 25 percent slopes. This unit is on the sides of hills and ridges. It consists mainly of moderately deep, well drained Cardigan soils; shallow, somewhat excessively drained Kearsarge soils; and areas of exposed bedrock that make up about 15 percent of the unit. The areas typically are long and narrow and range from 10 to 100 acres. The soils commonly have stones on the surface 1 to 2 feet in diameter and 5 to 30 feet apart. The Cardigan and Kearsarge soils and areas of exposed bedrock are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils and areas of exposed rock generally are at a slightly higher position than the Cardigan soils.

Cardigan soils make up about 35 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Kearsarge soils make up about 30 percent of this complex. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Included with this unit in mapping are spots of very shallow, loamy soils; spots of Dutchess and Bernardston soils; and small areas of loamy soils that are moderately well drained, poorly drained, and somewhat poorly drained. Included areas make up about 20 percent of this unit.

These Cardigan and Kearsarge soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 20 to 40 inches in the Cardigan soils and 10 to 20 inches in the Kearsarge soils. Both soils have moderate potential frost action.

Slope, the stones on the surface, and the areas of exposed rock make these soils generally unsuited to farming.

Nearly all of the acreage of this unit is wooded. Potential productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The shallow soil depth and droughtiness of the Kearsarge soils are major limitations. The stones and exposed rock on the surface and the slope limit the use of equipment and restrict access. Erosion is a major concern where the Cardigan soils are disturbed by heavy logging equipment. Constructing woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help to control erosion.

Slope, the stones and exposed rock on the surface, the depth to bedrock, and the frost-action potential are the main limitations of the soils for community development.

Capability subclass: VI_s.

Ch—Chocorua mucky peat. This soil is nearly level and very poorly drained. It is in broad, low-lying boggy depressions and drainageways. The areas typically are long and narrow or irregularly shaped and range from 20 to 100 acres.

Typically, the upper layers of this soil consist of dark reddish brown, black, and very dark gray partially decomposed herbaceous and woody material about 33 inches thick. The substratum is gray and dark gray sand that extends to a depth of 60 inches or more.

Included with this soil in mapping, particularly near the boundaries of the unit, are strips of very poorly drained and poorly drained mineral soils. Also included are spots of Ossipee and Greenwood soils. Included soils make up about 25 percent of this unit.

The permeability of this Chocorua soil is moderate to moderately rapid in the organic part and rapid in the underlying material. The available water capacity is high. The water table is at or near the surface for much of the year and seldom drops below a depth of 6 inches. Water commonly is ponded on the surface of the soil in spring. The stability of the organic material is poor, and the material is easily compressed. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Much of the acreage of this soil is in open wetlands covered with water-tolerant shrubs, grasses, and ferns. Some areas have sparse stands of water-tolerant trees.

The high water table, high frost-action potential, and poor stability of this soil make it generally unsuitable for most uses other than as wetland wildlife habitat or for areas for storm-water storage or ground-water recharge.

Capability subclass: VII_w.

CoA—Colton sandy loam, 0 to 3 percent slopes. This soil is nearly level and excessively drained. It is on the tops of terraces and plains. The areas are irregularly shaped and range from 5 to 50 acres.

Typically, the surface layer is dark brown sandy loam about 4 inches thick. The subsoil is strong brown and yellowish brown gravelly loamy sand 14 inches thick. The substratum is olive yellow very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are spots of Adams soils. Also included in low spots and drainageways are small areas of Naumburg soils and moderately well drained, sandy and gravelly soils. Included soils make up about 20 percent of this unit.

This Colton soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is very low, and the

soil is droughty. Organic matter content and natural fertility are low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. A few cleared areas are used for hay and pasture.

Droughtiness and low fertility make this soil poorly suited to farming. Fertilizer and lime help to improve fertility, and adding manure and crop residue to the soil improves tilth and available water capacity.

The very rapid permeability in the substratum causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields, and is the main limitation for community development.

Capability subclass: IIIs.

CoB—Colton sandy loam, 3 to 8 percent slopes.

This soil is gently sloping and excessively drained. It is on the tops of terraces and plains. The areas are irregularly shaped and range from 5 to 50 acres.

Typically, the surface layer is dark brown sandy loam about 4 inches thick. The subsoil is strong brown and yellowish brown gravelly loamy sand 14 inches thick. The substratum is olive yellow, very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are spots of Adams soils. Also included in low spots and drainageways are small areas of Naumburg soils and moderately well drained, sandy and gravelly soils. Included soils make up about 20 percent of this unit.

This Colton soil is rapidly permeable in the surface layer and subsoil and rapidly permeable in the substratum. Available water capacity is very low, and the soil is droughty. Organic matter content and natural fertility are low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. A few cleared areas are used for hay and pasture.

Droughtiness and low fertility make this soil poorly suited to farming. Fertilizer and lime help to improve fertility, and adding manure and crop residue to the soil improves tilth and available water capacity.

The very rapid permeability in the substratum causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields, and is the main limitation for community development.

Capability subclass: IIIs.

CoC—Colton sandy loam, 8 to 15 percent slopes.

This soil is sloping and excessively drained. It is on kames and eskers and on the sides of terraces and plains. The areas are irregularly shaped and range from 10 to 100 acres.

Typically, the surface layer is dark brown sandy loam about 4 inches thick. The subsoil is strong brown and

yellowish brown gravelly loamy sand 14 inches thick. The substratum is olive yellow very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Adams soils and spots of Hermon soils. Included soils make up about 15 percent of this unit.

This Colton soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low and the soil is droughty. Organic matter content and natural fertility are low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Nearly all of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. A few cleared areas are used for pasture, and some areas are a source of sand and gravel (fig. 6).

Slope, droughtiness, and low fertility make this soil generally unsuited to cultivated crops. The soil is better suited to drought-resistant hay and pasture crops.

Slope and the very rapid permeability of the substratum are the main limitations of this soil for community development. The permeability causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IVs.

CoE—Colton sandy loam, 15 to 50 percent slopes.

This soil is moderately steep to very steep and is excessively drained. It is on kames and eskers and on the sides of terraces and plains. The areas are irregularly shaped and range from 10 to 100 acres.

Typically, the surface layer is dark brown sandy loam about 4 inches thick. The subsoil is strong brown and yellowish brown gravelly loamy sand 14 inches thick. The substratum is olive yellow very gravelly sand to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Adams soils and spots of Hermon soils. Included soils make up about 15 percent of this unit.

This Colton soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low, and the soil is droughty. Organic matter content and natural fertility are low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Slope makes this soil generally unsuitable for farming and is the main limitation for community development. Nearly all of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. Slope limits the use of logging equipment, especially in areas where the slope is more than 35 percent.

Capability subclass: VIIs.

CyA—Croghan loamy fine sand, 0 to 5 percent slopes. This soil is nearly level to gently sloping and is moderately well drained. It is in depressions and broad



Figure 6.—A gravel pit in an area of Colton sandy loam, 8 to 15 percent slopes.

drainageways on terraces and outwash plains. The areas typically are long and narrow or irregularly shaped and range from 5 to 25 acres.

Typically, a thin layer of needles and twigs covers the surface of this soil. The surface layer is very dark grayish brown and grayish brown loamy fine sand about 5 inches thick. The upper part of the subsoil is yellowish brown loamy sand about 10 inches thick. The lower part of the subsoil is 13 inches thick. It is light olive brown and olive yellow loamy sand that is mottled with strong brown, yellowish brown, and grayish brown. The substratum is mottled, pale olive and olive sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small high areas of Adams soils and spots of Naumburg soils in low depressions and drainageways. Also included are small

areas of moderately well drained gravelly loamy sand. Included soils make up about 20 percent of this unit.

This Croghan soil is rapidly permeable in the surface layer and very rapidly permeable in the subsoil and substratum. The available water capacity is low. In wet periods, commonly early spring, this soil has a water table at a depth of 1.5 to 2 feet. In extended dry periods, however, the soil is sometimes droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. Most of the cleared acreage is used for hay or pasture.

This soil has good suitability for hay and pasture crops but is poorly suited to cultivated crops because of seasonal wetness and droughtiness.

Seasonal wetness and the frost-action potential are the main limitations of the soil for community development.

Capability subclass: IIIw.

DtB—Dutchess silt loam, 3 to 8 percent slopes.

This soil is gently sloping and well drained. It is on the tops of hills. The areas typically are rectangular and range from 5 to 35 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil is yellowish brown and light olive brown channery loam 22 inches thick. The substratum is olive channery sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained soils in drainageways and seep spots and small areas of Bernardston soils. Also included are spots of Cardigan and Kearsarge soils on small ridges and sharp rises. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Dutchess soil are moderate. The depth to bedrock is generally more than 5 feet. Potential frost-action is moderate.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderate for most tree species. A few areas are used for cultivated crops.

This soil has good suitability for hay and pasture crops and apple orchards. Suitability is fair for cultivated crops; slope and an erosion hazard are the main limitations. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas.

The moderate potential frost action and slope are the main limitations of the soil for community development.

Capability subclass: IIe.

DtC—Dutchess silt loam, 8 to 15 percent slopes.

This soil is sloping and well drained. It is on the sides of hills. The areas typically are rectangular and range from 5 to 35 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil is yellowish brown and light olive brown channery loam 22 inches thick. The substratum is olive channery sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained soils in drainageways and seep spots and small areas of Bernardston soils. Also included are spots of Cardigan and Kearsarge soils on small ridges and sharp rises. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Dutchess soil are moderate. The depth to bedrock is generally more than 5 feet. Potential frost-action is moderate.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderate for most tree species. A few areas are used for cultivated crops.

This soil is poorly suited to cultivated crops and fairly suited to hay and pasture and apple orchards; slope and an erosion hazard are the main limitations.

The moderate potential frost action and slope are the main limitations of the soil for community development.

Capability subclass: IIIe.

DtD—Dutchess silt loam, 15 to 25 percent slopes.

This soil is moderately steep and well drained. It is on the sides of hills. The areas typically are rectangular and range from 5 to 35 acres.

Typically, the surface layer is dark brown silt loam about 7 inches thick. The subsoil is yellowish brown and light olive brown channery loam 22 inches thick. The substratum is olive channery sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained soils in drainageways and seep spots and small areas of Bernardston soils. Also included are spots of Cardigan and Kearsarge soils on small ridges and sharp rises. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Dutchess soil are moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderate for most tree species. Slope makes this soil generally unsuited to cultivated crops and poorly suited to hay and pasture and limits the use of logging equipment.

Slope is the main limitation of this soil for community development.

Capability subclass: IVe.

DuC—Dutchess stony silt loam, 8 to 15 percent slopes.

This soil is sloping and well drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 5 to 35 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and needles. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is yellowish brown and light olive brown channery loam 25 inches thick. The substratum is olive brown channery sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained soils in drainageways and seep spots and small areas of Bernardston soils. Also included are spots of Cardigan and Kearsarge soils on

small ridges and sharp rises. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Dutchess soil are moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. A few areas are used for unimproved pasture. The stones on the surface make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture crops and limit the use of logging equipment.

Slope, the stones on the surface, and the potential frost action are the main limitations for community development.

Capability subclass: VI_s.

DuD—Dutchess stony silt loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 5 to 35 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and needles. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is yellowish brown and light olive brown channery loam 25 inches thick. The substratum is olive brown channery sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained soils in drainageways and seep spots and small areas of Bernardston soils. Also included are spots of Cardigan and Kearsarge soils on small ridges and sharp rises. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Dutchess soil are moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

A few areas of this soil are used for unimproved pasture, but the slope and stones on the surface make the soil generally unsuited to farming.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. The stones on the surface and slope limit the use of equipment, and erosion is a concern where this soil is disturbed by heavy logging equipment. Constructing woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help to control erosion.

Slope is the main limitation of this soil for community development.

Capability subclass: VI_s.

DuE—Dutchess stony silt loam, 25 to 50 percent slopes. This soil is steep to very steep and is well

drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 5 to 50 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves and needles. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is yellowish brown and light olive brown channery loam 25 inches thick. The substratum is olive brown channery sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained soils in seep spots and small areas of Bernardston soils. Also included are spots of Cardigan and Kearsarge soils on small ridges and sharp rises. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Dutchess soil are moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Slope makes this soil generally unsuited to farming. Most areas are wooded, and potential productivity is moderate for most tree species. The stones on the surface and the slope limit the use of logging equipment. Erosion is a major concern where this soil is disturbed by heavy logging equipment. Constructing woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help control erosion.

Slope limits this soil for most types of nonfarm use other than for wildlife habitat.

Capability subclass: VII_s.

Gw—Greenwood mucky peat. This soil is nearly level and very poorly drained. It is in broad, low-lying boggy depressions and drainageways that are frequently flooded in early spring. The areas typically are irregularly shaped and range from 20 to 200 acres.

Typically, this soil consists of layers of very dark brown, dark reddish brown, and very dark grayish brown partially decomposed herbaceous and woody material. The material extends to a depth of 60 inches or more.

Included with this soil in mapping, particularly near the boundaries of the unit, are strips of very poorly drained and poorly drained mineral soils. Also included are spots of Chocorua and Ossipee soils. Included soils make up about 25 percent of this unit.

This Greenwood soil has moderately rapid permeability. The available water capacity is very high. The water table of this soil is at or near the surface for much of the year and seldom drops below a depth of 12 inches. Water commonly is ponded on the soil in the spring. The organic material has poor stability and is easily compressed. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Most of the acreage of this soil is covered by water-tolerant shrubs, grasses, and ferns. Water-tolerant trees are in a few areas. The high water table, flooding, poor stability, and frost-action potential make this soil generally unsuitable for most uses other than as wetland wildlife habitat or as areas for storm-water storage or ground-water recharge. Drainage will increase the suitability of the soil for crops, but drainage outlets are difficult to establish in some areas.

Capability subclass: VIIIw.

Ha—Hadley silt loam, frequently flooded. This soil is nearly level and well drained. It is on low-bottom flood plains in major stream valleys. The areas typically are long and narrow and range from 10 to 25 acres.

Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is a stratified dark grayish brown, light olive brown, and olive silt loam about 27 inches thick. The lower part of the substratum is stratified olive very fine sandy loam and loamy fine sand.

Included with this soil in mapping are small areas of Winooski soils in low spots and in long, narrow depressions. Included soils make up about 15 percent of this unit.

This Hadley soil is moderately permeable. Available water capacity is high. The seasonal high water table is at a depth of 4 to 6 feet. The frequency of flooding ranges from once a year to once in 3 years. The time of flooding is typically in the early spring. The depth to bedrock is generally more than 5 feet. The potential frost action is high.

Nearly all of the acreage of this soil is used for cultivated crops or hay. A few small isolated areas are wooded, and potential productivity is moderately high for most tree species.

This soil has good suitability for farming. Flooding is a limitation for cultivated crops, but it is least likely to occur during the growing season.

Flooding is the major limitation of the soil for community development, but the areas of this soil provide flood-water storage.

Capability class: I.

Hb—Hadley silt loam, occasionally flooded. This soil is nearly level and well drained. It is on high-bottom flood plains in major stream valleys. The areas typically are long and narrow and range from 10 to 100 acres.

Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The substratum extends to a depth of 60 inches or more. The upper part of the substratum is a stratified dark grayish brown, light olive brown, and olive silt loam about 27 inches thick. The lower part of the substratum is stratified olive very fine sandy loam and loamy fine sand.

Included with this soil in mapping are small areas of

Winooski soils in low spots and in long, narrow depressions. Included soils make up about 15 percent of this unit.

This Hadley soil is moderately permeable. Available water capacity is high. The seasonal high water table is at a depth of 4 to 6 feet. The frequency of flooding ranges from once in 3 years to once in 10 years or more. The time of flooding is typically in the early spring. The depth to bedrock is generally more than 5 feet. The potential frost action is high.

Nearly all of the acreage of this soil is used for cultivated crops or hay (fig. 7). The soil has good suitability for farming and hay and pasture crops. A few small isolated areas are wooded, and potential productivity is moderately high for most tree species.

Flooding is the major limitation of the soil for community development. The high potential frost action is a limitation for local roads and streets. Some areas of this soil provide sites for recreation or are suitable for flood-water storage.

Capability class: I.

HcA—Haven very fine sandy loam, 0 to 3 percent slopes. This soil is nearly level and well drained. It is on the tops of terraces and plains. The areas are irregularly shaped and range from 10 to 30 acres.

Typically, the surface layer is dark brown very fine sandy loam about 9 inches thick. The subsoil is light olive brown very fine sandy loam 11 inches thick. The substratum is light olive brown and olive gravelly loamy sand and very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Warwick, Quonset, and Agawam soils. Also included are small areas of moderately well drained, sandy and gravelly soils in drainageways and depressions. Included soils make up about 20 percent of this unit.

This Haven soil is moderately permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low to moderate. The sandy and gravelly texture of the substratum causes this soil to be somewhat droughty in periods of low rainfall. The depth to bedrock is generally more than 5 feet. The potential frost action is moderate.

Much of the acreage of this soil is used for hay, pasture, or cultivated crops. Some areas are wooded, and potential productivity is moderately high for most tree species.

This soil is suited to hay, pasture, and cultivated crops. The soil dries out rapidly in the spring and can be tilled earlier than most other soils. Crops on this soil respond well to fertilizer and lime. Because of the low to moderate available water capacity, however, crop yields are sometimes lower in years when rainfall is low during the growing season. Use of deep-rooted, drought-tolerant grasses and legumes for hay and pasture helps overcome the low to moderate available water capacity.



Figure 7.—An area of Hadley silt loam, occasionally flooded, used for silage corn.

The very rapid permeability of the substratum causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields, and is the main limitation for community development.

Capability class: I.

HcB—Haven very fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the tops of terraces and plains. The areas are irregularly shaped and range from 10 to 30 acres.

Typically, the surface layer is dark brown very fine sandy loam about 9 inches thick. The subsoil is light olive brown very fine sandy loam 11 inches thick. The substratum is light olive brown and olive gravelly loamy sand and very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Warwick, Quonset, and Agawam soils. Also included are small areas of moderately well drained, sandy and gravelly soils in drainageways and depressions. Included soils make up about 20 percent of this unit.

This Haven soil is moderately permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low to moderate. The sandy and gravelly texture of the substratum causes this soil to be somewhat droughty in periods of low rainfall. The depth to bedrock is generally more than 5 feet. The potential frost action is moderate.

Much of the acreage of this soil is used for hay, pasture, or cultivated crops. Some areas are wooded, and potential productivity is moderately high for most tree species.

This soil is suited to farming, but slope and an erosion

hazard limit use for cultivated crops. Stripcropping, minimum tillage, contour plowing, and using grasses and legumes in the cropping system help to reduce erosion in cultivated areas. This soil dries out rapidly in the spring and can be tilled earlier than most other soils. Crops on this soil respond well to fertilizer and lime. Because of the low to moderate available water capacity, however, crop yields are sometimes lower in years when rainfall is low during the growing season. The use of deep-rooted, drought-tolerant grasses and legumes for hay pasture helps to overcome the low to moderate available water capacity.

Slope and the moderate potential frost action are the main limitations of this soil for community development. The very rapid permeability of the substratum causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields.

Capability subclass: IIe.

HcC—Haven very fine sandy loam, 8 to 15 percent slopes. This soil is sloping and somewhat excessively drained. It is on kames and eskers and on the sides of terraces and plains. The areas are irregularly shaped and range from 10 to 30 acres.

Typically, the surface layer is dark brown very fine sandy loam about 9 inches thick. The subsoil is light olive brown very fine sandy loam 11 inches thick. The substratum is light olive brown and olive gravelly loamy sand and very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Warwick, Quonset, and Agawam soils that make up about 20 percent of this unit.

This Haven soil is moderately permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low to moderate. The sandy and gravelly texture of the substratum causes this soil to be somewhat droughty in periods of low rainfall. The depth to bedrock is generally more than 5 feet. The potential frost action is moderate.

Most of the acreage of this soil is used for hay or pasture or is wooded. Potential productivity is moderately high for most tree species. A few small areas of this soil are used for cultivated crops.

This soil is fairly suited to hay and pasture. Slope and an erosion hazard make the soil poorly suited to cultivated crops. Stripcropping, minimum tillage, contour plowing, and using grasses and legumes in the cropping system help to control erosion. Because of the low to moderate available water capacity, crop yields are sometimes lower in years when rainfall is low during the growing season. The use of deep-rooted, drought-tolerant grasses and legumes for hay and pasture helps to overcome the low to moderate available water capacity.

Slope is the main limitation of this soil for community development. The very rapid permeability of the

substratum causes a hazard of ground-water pollution in areas of this soil used for septic tank absorption fields.

Capability subclass: IIIe.

HeB—Hermon fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained to somewhat excessively drained. It is on the tops of hills. The areas typically are rectangular and range from 5 to 40 acres.

Typically, the surface layer is dark yellowish brown fine sandy loam about 7 inches thick. The upper part of the subsoil is yellowish red and strong brown gravelly sandy loam 10 inches thick. The lower part of the subsoil is yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and brownish gray very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Monadnock soils. Also included are small areas of Sunapee soils in shallow drainageways and in seep spots. Included soils make up about 15 percent of this unit.

The permeability of this Hermon soil is rapid. Available water capacity is low, and the soil is somewhat droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderate for most tree species. A few areas of the soil are used for cultivated crops.

This soil is fairly suited to farming. Droughtiness is a limitation for hay and pasture and, along with slope and an erosion hazard, limits the use of soil for cultivated crops. Adding manure and crop residue to the soil improves tilth and available water capacity. Stripcropping, contour plowing, minimum tillage and using grasses and legumes in the cropping system help to reduce the hazard of erosion.

Slope limits this soil for some types of community development. Droughtiness is a limitation for lawns and landscaping. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IIs.

HeC—Hermon fine sandy loam, 8, to 15 percent slopes. This soil is sloping and well drained to somewhat excessively drained. It is on the hillsides. The areas typically are rectangular and range from 5 to 40 acres.

Typically, the surface layer is dark yellowish brown fine sandy loam about 7 inches thick. The upper part of the subsoil is yellowish red and strong brown gravelly sandy loam 10 inches thick. The lower part of the subsoil is yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and brownish gray very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Monadnock soils. Also included are small areas of Sunapee soils in drainageways and seep spots. Included soils make up about 15 percent of this unit.

The permeability of this Hermon soil is rapid. Available water capacity is low, and the soil is somewhat droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderate for most tree species.

Droughtiness, slope, and an erosion hazard make this soil poorly suited to cultivated crops and are the main limitations for hay and pasture crops.

Slope limits this soil for some types of community development. Droughtiness is a limitation for lawns and landscaping. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IIIe.

HeD—Hermon fine sandy loam, 15 to 25 percent slopes. This soil is moderately steep and well drained to somewhat excessively drained. It is on the sides of hills. The areas typically are rectangular and range from 10 to 40 acres.

Typically, the surface layer is dark yellowish brown fine sandy loam about 7 inches thick. The upper part of the subsoil is yellowish red and strong brown gravelly sandy loam 10 inches thick. The lower part of the subsoil is yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and brownish gray very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Monadnock soils. Also included are small areas of Sunapee soils in seep spots. Included soils make up about 15 percent of this unit.

The permeability of this Hermon soil is rapid. Available water capacity is low, and the soil is somewhat droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Some areas of this soil are used for unimproved pasture, but slope makes the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Most areas of the soil are wooded. Potential productivity is moderate for most tree species, but slope limits the use of equipment.

Slope limits this soil for some types of community development. Droughtiness is a limitation for lawns and landscaping. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IVe.

HmB—Hermon stony fine sandy loam, 3 to 8

percent slopes. This soil is gently sloping and well drained to somewhat excessively drained. It is on the tops of hills. The areas typically are irregularly shaped and range from 5 to 50 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and yellowish red gravelly fine sandy loam 7 inches thick. The lower part of the subsoil is strong brown gravelly sandy loam 8 inches thick and yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and brownish gray very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Monadnock soils. Also included are small areas of Sunapee soils in shallow drainageways and in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Hermon soil is rapid. Available water capacity is low, and the soil is somewhat droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

A few areas of this soil are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of this soil is wooded. Potential productivity is moderate for most tree species, but the stones on the surface limit the use of equipment.

Slope limits this soil for some types of community development. Droughtiness is a limitation for lawns and landscaping. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: VIc.

HmC—Hermon stony fine sandy loam, 8 to 15 percent slopes. This soil is sloping and well drained to somewhat excessively drained. It is on the sides of hills. The areas typically are irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and yellowish red gravelly fine sandy loam 7 inches thick. The lower part of the subsoil is strong brown gravelly sandy loam 8 inches thick and yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and brownish gray

very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Lyman soils on sharp rises, small areas of Monadnock soils, and small areas of Sunapee soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Hermon soil is rapid. Available water capacity is low, and the soil is somewhat droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Nearly all of the acreage of this soil is wooded. Potential productivity is moderate for most tree species, but the stones on the surface limit the use of equipment. Slope and the stones on the surface make the soil generally unsuited to farming.

Slope limits this soil for some types of community development. Droughtiness is a limitation for lawns and landscaping. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: Vls.

HmD—Hermon stony fine sandy loam, 15 to 25 percent slopes. This soil is moderately steep and well drained to somewhat excessively drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and yellowish red gravelly fine sandy loam 7 inches thick. The lower part of the subsoil is strong brown gravelly sandy loam 8 inches thick and yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and brownish gray very gravelly sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Lyman soils on sharp rises, small areas of Monadnock soils, and small areas of Sunapee soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Hermon soil is rapid. Available water capacity is low, and the soil is somewhat droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Nearly all of the acreage of this soil is wooded. Potential productivity is moderate for most tree species, but the stones on the surface limit the use of logging equipment. Slope and the stones on the surface make the soil generally unsuited to farming.

Slope limits this soil for some types of community development. Droughtiness is a limitation for lawns and

landscaping. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: Vls.

KeE—Kearsarge-Cardigan-Rock outcrop complex, 25 to 50 percent slopes. This unit is on the sides of hills and ridges. It consists mainly of shallow, somewhat excessively drained Kearsarge soils; moderately deep, well drained Cardigan soils; and areas of exposed bedrock that make up about 20 percent of the unit. The areas of the unit typically are long and narrow and range from 20 to 150 acres. The soils of this complex commonly have stones on the surface that are 1 to 2 feet in diameter and 5 to 30 feet apart. The Kearsarge and Cardigan soils and the areas of exposed bedrock are in such an intricate pattern that it was not practical to map them separately. The Kearsarge soils and areas of exposed rock generally are at a slightly higher position on the landscape than the Cardigan soils.

Kearsarge soils make up about 35 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 13 inches thick. Gray phyllite bedrock is at a depth of 17 inches.

Cardigan soils make up about 30 percent of the unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is dark brown silt loam about 4 inches thick. The subsoil is dark yellowish brown and light olive brown silt loam about 18 inches thick. The substratum is dark grayish brown silt loam about 8 inches thick. Gray phyllite bedrock is at a depth of 30 inches.

Included with this soil in mapping are spots of very shallow, loamy soils and spots of Dutchess and Bernardston soils. Included soils make up about 15 percent of the unit.

These Kearsarge and Cardigan soils are moderately permeable. Available water capacity is moderate in the Cardigan soils and low in the Kearsarge soils. The Kearsarge soils are somewhat droughty. The depth to bedrock is 10 to 20 inches in the Kearsarge soils and 20 to 40 inches in the Cardigan soils. These soils have moderate potential frost action.

Nearly all of the acreage of this unit is wooded. Potential productivity for most tree species is moderately high on the Cardigan soils and low on the Kearsarge soils. The depth to bedrock and droughtiness are the major limitations for trees on the Kearsarge soils. The slope of the unit limits the use of logging and forestry equipment. Slope and the depth to rock and the areas of exposed rock restrict the construction of access roads. Placing access roads on the contour and seeding and

mulching roads, skid trails, and other disturbed areas are practices that help to control erosion.

Slope, the depth to bedrock, and the stones and exposed rock on the surface make this unit generally unsuitable for farming or community development.

Capability subclass: VIIs.

Lk—Limerick silt loam. This soil is nearly level and poorly drained. It is in major stream valleys on low-bottom flood plains and in low-lying drainageways and depressions in flood plains. The areas typically are long and narrow and range from 5 to 20 acres. They are subject to frequent flooding.

Typically, the surface layer is dark olive gray silt loam about 8 inches thick. The substratum extends to a depth of 60 inches or more. It is olive gray, dark gray, and gray silt loam that is mottled with gray, brown, and red.

Included with this soil in mapping are small areas of Winooski soils and spots of Saco soils in low-lying depressions and drainageways. Included soils make up about 15 percent of this unit.

This Limerick soil is moderately permeable. Available water capacity is high. In wet periods, commonly in early spring, this soil has a water table at a depth of 6 inches to 1-1/2 feet. The time of flooding is typically in the early spring and following periods of extended rainfall. The depth to bedrock is generally more than 5 feet. The potential frost action is high.

Most of the acreage of this soil is covered with water-tolerant trees and shrubs. Some areas are used for unimproved pasture.

The high water table and flooding make this soil poorly suited to hay and pasture and generally unsuited to cultivated crops.

The potential productivity of this soil for water-tolerant trees species is moderate. The high water table and frequent flooding are major limitations for forestry management and logging.

Flooding and the water table are major limitations of the soil for community development. Areas of this soil provide floodwater storage.

Capability subclass: IIIw.

LsE—Lyman-Monadnock-Rock outcrop complex, 25 to 50 percent slopes. This unit is on the sides of hills, ridges, and mountains. It consists mainly of shallow, somewhat excessively drained Lyman soils; deep, well drained Monadnock soils; and areas of exposed bedrock that make up about 20 percent of the unit. The areas of the unit typically are long and narrow and range from 50 to 300 acres. Stones that are 1 to 2 feet in diameter and 5 to 20 feet apart are on the surface. The Lyman and Monadnock soils and areas of exposed bedrock are in such an intricate pattern that it was not practical to map them separately. The Lyman soils and areas of exposed

rock generally are on ridges and knolls, and the Monadnock soils are at lower positions.

Lyman soils make up about 35 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark brown and brown fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and reddish brown fine sandy loam 6 inches thick. The lower part of the subsoil is dark yellowish brown fine sandy loam 7 inches thick. Hard bedrock is at a depth of 15 inches.

Monadnock soils make up about 30 percent of this unit. Typically, they are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this unit in mapping are spots of moderately deep, loamy soils; spots of very shallow, loamy soils; spots of Marlow and Hermon soils; and small areas of rubble land. Included areas make up about 15 percent of this unit.

The Lyman soils of this unit are moderately rapidly permeable. The Monadnock soils are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. Available water capacity is moderate in the Monadnock soils and low in the Lyman soils. The Lyman soils are somewhat droughty. The depth to bedrock is 8 to 20 inches in the Lyman soils and is generally more than 5 feet in the Monadnock soils. Potential frost action is moderate in the Lyman soils and low in the Monadnock soils.

Slope and the stones and exposed rock on the surface make this unit generally unsuitable for farming.

Nearly all of the acreage of this unit is wooded. Potential productivity for most tree species is moderate. The depth to bedrock and droughtiness are main limitations for woodland in the Lyman soils. The use of equipment for logging and forestry management is limited and often impractical because of slope and areas of jagged exposed bedrock.

Slope and the depth to bedrock in the Lyman soils are the major limitations of the unit for community development.

Capability subclass: VIIs.

LuA—Lyme-Moosilauke loams, 0 to 3 percent slopes. This unit is mainly in broad, low-lying depressions and drainageways. It consists mainly of deep, poorly drained to somewhat poorly drained soils

that have a water table at or near the surface 6 to 8 months of the year. The areas typically are irregularly shaped and range from 5 to 25 acres. The Lyme and Moosilauke soils are in such an intricate pattern that it was not practical to map them separately.

Lyme soils make up about 50 percent of this unit. Typically, they have a surface layer of very dark grayish brown loam about 7 inches thick. The subsoil is mottled and grayish brown, gray, and olive gravelly sandy loam 23 inches thick. The substratum is mottled, gray and olive gravelly sandy loam that extends to a depth of 60 inches or more.

Moosilauke soils make up about 30 percent of this unit. Typically, they have a surface layer of very dark grayish brown loam about 8 inches thick. The subsoil is mottled, gray and olive gray sandy loam 12 inches thick. The substratum is mottled and olive, yellowish brown, and pale olive gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are small areas of Sunapee soils; very poorly drained, loamy and sandy soils; and Pillsbury soils. Included soils make up about 20 percent of this unit.

The Lyme soils of this unit are moderately permeable. The Moosilauke soils are moderately rapidly permeable in the surface layer and subsoil and rapidly permeable in the substratum. The available water capacity is moderate in the Lyme soils and low to moderate in the Moosilauke soils. The depth to bedrock is generally more than 5 feet in both soils, and the frost-action potential is high in both.

Much of the acreage of this unit is wooded. A few areas are used for hay or pasture.

The high water table makes the soils of this unit generally unsuited to cultivated crops and poorly suited to hay and pasture. The suitability for crops can be improved by drainage, but outlets for drainage systems are difficult to establish in some areas.

The soils have moderate potential productivity for water-tolerant tree species. The high water table limits the use of equipment for logging and forestry management. Logging operations are more easily conducted in the winter when the soils are frozen or in the summer when the water table is lower.

The water table and high potential frost action are the main limitations of the soils for community development. The soils are suitable for storm-water retention areas.

Capability subclass: IIIw.

LyA—Lyme-Moosilauke stony loams, 0 to 3 percent slopes. This unit is mainly in broad, low-lying depressions and long, narrow drainageways. It consists mainly of deep, poorly drained to somewhat poorly drained soils that have a water table at or near the surface 6 to 8 months of the year. The areas typically are long and narrow and range from 5 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30

feet apart are on the surface. The Lyme and Moosilauke soils are in such an intricate pattern that it was not practical to map them separately.

Lyme soils make up about 50 percent of this unit. Typically, they have a surface layer of very dark grayish brown loam about 7 inches thick. The subsoil is mottled and grayish brown, gray, and olive gravelly sandy loam 23 inches thick. The substratum is mottled, gray and olive gravelly sandy loam that extends to a depth of 60 inches or more.

Moosilauke soils make up about 30 percent of this unit. Typically, they have a surface layer of very dark grayish brown loam about 8 inches thick. The subsoil is mottled, gray and olive gray sandy loam 12 inches thick. The substratum is mottled and olive, yellowish brown, and pale olive gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are small areas of Sunapee soils; very poorly drained, loamy and sandy soils; and Pillsbury soils. Included soils make up about 20 percent of this unit.

The Lyme soils of this are moderately permeable. The Moosilauke soils are moderately rapidly permeable in the surface layer and subsoil and rapidly permeable in the substratum. The available water capacity is moderate in the Lyme soils and low to moderate in the Moosilauke soils. The depth to bedrock is generally more than 5 feet in both soils, and the frost-action potential is high in both.

The high water table and stones on the surface make the soils of this unit generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of these soils is wooded. The soils have moderate potential productivity for water-tolerant tree species. The stones on the surface and the high water table limit the use of equipment for logging and forestry management. Logging operations are more easily conducted in winter when the soils are frozen or in summer when the water table is lower.

The water table and high potential frost action are the main limitations of the soils for community development. The soils are suitable for storm-water retention areas.

Capability subclass: VIIs.

LyB—Lyme-Moosilauke stony loams, 3 to 8 percent slopes. This unit is mainly in broad, low-lying depressions and long, narrow drainageways. It consists mainly of deep, poorly drained to somewhat poorly drained soils that have a water table at or near the surface 6 to 8 months of the year. The areas typically are long and narrow and range from 5 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface. The Lyme and Moosilauke soils are in such an intricate pattern that it was not practical to map them separately.

Lyme soils make up about 50 percent of this unit. Typically, they have a surface layer of very dark grayish

brown loam about 7 inches thick. The subsoil is mottled and grayish brown, gray, and olive gravelly sandy loam 23 inches thick. The substratum is mottled, gray and olive gravelly sandy loam that extends to a depth of 60 inches or more.

Moosilauke soils make up about 30 percent of this unit. Typically, they have a surface layer of very dark grayish brown loam about 8 inches thick. The subsoil is mottled, gray and olive gray sandy loam 12 inches thick. The substratum is mottled and olive, yellowish brown, and pale olive gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are small areas of Sunapee soils; very poorly drained, loamy and sandy soils; and Pillsbury soils. Included soils make up about 20 percent of this unit.

The Lyme soils of this unit are moderately permeable. The Moosilauke soils are moderately rapidly permeable in the surface layer and subsoil and rapidly permeable in the substratum. The available water capacity is moderate in the Lyme soils and low to moderate in the Moosilauke soils. The depth to bedrock is generally more than 5 feet in both soils, and the frost-action potential is high in both.

The high water table and stones on the surface make the soils of this unit generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of these soils is wooded. The soils have moderate potential productivity for water-tolerant tree species. The stones on the surface and the high water table limit the use of equipment for logging and forestry management. Logging operations are more easily conducted in winter when the soils are frozen or in summer when the water table is lower.

The seasonal high water table and high potential frost action are the main limitations of the soils for community development. The soils are suitable for storm-water retention areas.

Capability subclass: VIIs.

MaB—Marlow loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the crests of smooth, rounded hills. The areas typically are rectangular and range from 5 to 50 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil is dark brown, yellowish brown, and light olive brown fine sandy loam 16 inches thick. The substratum is a very firm and compact layer of olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Monadnock soils. Also included are small areas of Peru and Pillsbury soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Marlow soil is moderate above the substratum and slow in the substratum. Available

water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 2 to 2-1/2 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is used for hay or pasture. A few areas are used for cultivated crops. Some areas are wooded, and potential productivity is moderately high for most tree species.

This soil has good suitability for hay and pasture and for apple orchards. It has fair suitability for cultivated crops; slope and an erosion hazard are the main limitations. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce erosion in cultivated areas. Wetness in the spring sometimes limits tillage and haying.

The slow permeability in the substratum, seasonal wetness, and the moderate potential frost action are the main limitations of this soil for community development.

Capability subclass: IIe.

MaC—Marlow loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the sides of smooth, rounded hills and on the lower, smooth side slopes of hilly uplands. The areas typically are rectangular and range from 5 to 50 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil is dark brown, yellowish brown, and light olive brown fine sandy loam 16 inches thick. The substratum is a very firm and compact layer of olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Monadnock soils. Also included are small areas of Peru soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Marlow soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 2 to 2-1/2 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderately high for most tree species.

This soil is fairly suited to hay and pasture and to apple orchards. Slope and an erosion hazard make the soil poorly suited to cultivated crops. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas. Wetness in the spring sometimes limits tillage and haying.

Slope, the slow permeability in the substratum, seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: IIIe.

MaD—Marlow loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on the sides of smooth, rounded hills and on the smooth side slopes of hilly uplands. The areas typically are rectangular and range from 10 to 50 acres.

Typically, the surface layer is dark brown loam about 8 inches thick. The subsoil is dark brown, yellowish brown, and light olive brown fine sandy loam 16 inches thick. The substratum is a very firm and compact layer of olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Monadnock soils. Also included are small areas of Peru soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Marlow soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 2 to 2-1/2 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is used for pasture. Some areas are wooded, and potential productivity is moderately high for most tree species, but slope limits the use of equipment for logging and forestry management.

Slope and a severe erosion hazard make this soil unsuited to cultivated crops and poorly suited to hay and pasture.

Slope, the slow permeability in the substratum, seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: IVe.

MbB—Marlow stony loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the crests of smooth, rounded hills. The areas typically are oval and range from 10 to 70 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark grayish brown loam about 4 inches thick. The upper part of the subsoil is strong brown loam and dark brown and yellowish brown fine sandy loam 8 inches thick. The lower part of the subsoil is yellowish brown and light olive brown fine

sandy loam 12 inches thick. The substratum is a very firm and compact layer of olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Monadnock soils. Also included are small areas of Peru and Pillsbury soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Marlow soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 2 to 2-1/2 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture.

The stones on the surface make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The slow permeability in the substratum, seasonal wetness, and the moderate potential frost action are the main limitations of this soil for community development.

Capability subclass: VIc.

MbC—Marlow stony loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the sides of smooth, rounded hills and on the lower side slopes of hilly uplands. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark grayish brown loam about 4 inches thick. The upper part of the subsoil is strong brown loam and dark brown and yellowish brown fine sandy loam 8 inches thick. The lower part of the subsoil is yellowish brown and light olive brown fine sandy loam 12 inches thick. The substratum is a very firm and compact layer of olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Monadnock soils. Also included are small areas of Peru soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Marlow soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 2 to 2-1/2 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture.

The stones on the surface make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Slope, the slow permeability in the substratum, seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: VI.

MbD—Marlow stony loam, 15 to 25 percent slopes.

This soil is moderately steep and well drained. It is on the sides of smooth, rounded hills and on the side slopes of hilly uplands. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark grayish brown loam about 4 inches thick. The upper part of the subsoil is strong brown loam and dark brown and yellowish brown fine sandy loam 8 inches thick. The lower part of the subsoil is yellowish brown and light olive brown fine sandy loam 12 inches thick. The substratum is a very firm and compact layer of olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Monadnock soils. Also included are small areas of Peru soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Marlow soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 2 to 2-1/2 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

The stones on the surface and slope make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. The stones on the surface and the slope limit the use of equipment for logging and forestry management.

Slope, the slow permeability in the substratum, seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: VI.

MbE—Marlow stony loam, 25 to 50 percent slopes.

This soil is steep to very steep and is well drained. It is

on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 20 to 150 acres. Stones that are about 1 to 2 feet in diameter and 5 to 20 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark grayish brown loam about 4 inches thick. The upper part of the subsoil is strong brown loam and dark brown and yellowish brown fine sandy loam 8 inches thick. The lower part of the subsoil is yellowish brown and light olive brown fine sandy loam 12 inches thick. The substratum is a very firm and compact layer of olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Monadnock and Lyman soils. Also included are small areas of Peru soils in seep spots mainly near the bottom of slopes. Included soils make up about 20 percent of this unit.

The permeability of this Marlow soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, this soil has a water table perched on the substratum at a depth of 2 to 2-1/2 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Slope and the stones on the surface make this soil generally unsuited to farming. Nearly all of the acreage of the soil is wooded, and potential productivity is moderately high for most tree species. Slope limits the use of equipment for logging and forestry management and in places makes its use impractical. Erosion is a major concern when this soil is disturbed by heavy logging equipment. Construction of woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas are practices that help to control erosion.

Slope, the slow permeability in the substratum, seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: VII.

McB—Monadnock fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the tops of hills. The areas typically are rectangular and range from 5 to 50 acres.

Typically, the surface layer is dark yellowish brown fine sandy loam about 8 inches thick. The subsoil is yellowish brown, light olive brown, and olive fine sandy loam 23 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hermon and Marlow soils. Also included are small areas of Sunapee soils in shallow drainageways and seep

spots. Included soils make up about 15 percent of this unit.

The permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. Available water capacity is moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderate for most tree species. A few areas are used for cultivated crops.

This soil has good suitability for hay and pasture. Suitability for cultivated crops is fair; slope and an erosion hazard are the main limitations. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas.

Slope limits the soil for some types of community development.

Capability subclass: IIe.

McC—Monadnock fine sandy loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the sides of hills. The areas typically are rectangular and range from 5 to 40 acres.

Typically, the surface layer is dark yellowish brown fine sandy loam about 8 inches thick. The subsoil is yellowish brown, light olive brown, and olive fine sandy loam 23 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hermon and Marlow soils. Also included are small areas of Sunapee soils in drainageways and seep spots. Included soils make up about 15 percent of this unit.

The permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. Available water capacity is moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderate for most tree species. A few areas are used for cultivated crops.

Slope and an erosion hazard make this soil poorly suited to cultivated crops and are the main limitations for hay and pasture.

Slope limits the soil for some types of community development.

Capability subclass: IIIe.

McD—Monadnock fine sandy loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on the sides of hills. The areas typically are rectangular and range from 10 to 40 acres.

Typically, the surface layer is dark yellowish brown fine

sandy loam about 8 inches thick. The subsoil is yellowish brown, light olive brown, and olive fine sandy loam 23 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hermon and Marlow soils. Also included are small areas of Sunapee soils in seep spots. Included soils make up about 15 percent of this unit.

The permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. Available water capacity is moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Some areas of this soil are used for unimproved pasture, but slope makes the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Most of the acreage of the soil is wooded, and potential productivity is moderate for most tree species. Slope limits the use of equipment for logging and forestry management.

Slope is the main limitation of the soil for community development.

Capability subclass: IVe.

MfB—Monadnock stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and well drained. It is on the tops of hills. The areas typically are somewhat oval and range from 5 to 50 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet part are on the surface.

Typically, this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Lyman soils and small areas of Hermon and Marlow soils. Also included are small areas of Sunapee soils in shallow drainageways and in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. Available water capacity is moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

A few areas of this soil are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species.

Slope is the main limitation of the soil for some types of community development.

Capability subclass: Vls.

MfC—Monadnock stony fine sandy loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is a gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are spots of Lyman soils on sharp rises and small areas of Hermon and Marlow soils. Also included are small areas of Sunapee soils in drainageways and seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. Available water capacity is moderate. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

A few areas of this soil are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Most of the acreage of this soil is wooded, and potential productivity is moderate for most tree species.

Slope is the main limitation of this soil for community development.

Capability subclass: Vls.

MfD—Monadnock stony fine sandy loam, 15 to 25 percent slopes. This soil is moderately steep and well drained. It is on the sides of hills. The areas typically are long and narrow or irregularly shaped and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is a gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are spots of Lyman soils on sharp rises and small areas of Hermon and

Marlow soils. Also included are small areas of Sunapee soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Monadnock soil is moderate in the surface layer and subsoil and moderately rapid in the substratum. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Slope and the stones on the surface make this soil generally unsuited to farming.

Nearly all of the acreage of this soil is wooded, and potential productivity is moderate for most tree species. The stones on the surface and slope limit the use of equipment for logging and forestry management.

Slope is the main limitation of this soil for community development.

Capability subclass: Vls.

MrC—Monadnock-Hermon association, very stony, sloping. This unit is on the crests and lower side slopes of hills and mountains. The areas are long and narrow or irregularly shaped and range from 20 to 200 acres. Stones that are about 1 to 2 feet in diameter and less than 5 feet apart are on the surface. Slopes range from 8 to 15 percent. The unit is about 55 percent deep, well drained Monadnock soils; 25 percent deep, somewhat excessively drained to well drained Hermon soils; and 20 percent other soils. The Monadnock soils mainly are on the smoother parts of the landscape, and the Hermon soils are on the more hummocky parts.

Typically, the Monadnock soils are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Typically, the Hermon soils are covered by a thin layer of partially decomposed and decomposed leaves, needles and twigs. The surface layer is very dark brown and light brownish gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and yellowish red gravelly fine sandy loam 7 inches thick. The lower part of the subsoil is strong brown gravelly sandy loam 8 inches thick and yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and grayish brown very gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are spots of rock outcrop and small areas of Lyman soils on sharp rises and small ridges. Also included are small areas of Sunapee, Lyme, and Moosilauke soils in drainageways and seep spots.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Hermon soils are rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Hermon soils. The depth to bedrock is generally more than 5 feet in both soils, and potential frost action is low in both.

Almost all of the acreage of this unit is wooded. Potential productivity for trees is moderate on both soils. Droughtiness is the main limitation for trees on the Hermon soils.

The stones on the surface and the slope make these soils generally unsuitable for farming and are the main limitations for community development. Some areas are suitable for wildlife habitat or for some types of recreation.

Capability subclass: VIs.

MrD—Monadnock-Hermon association, very stony, moderately steep. This unit is on the sides of hills and mountains. The areas are long and narrow or irregularly shaped and range from 20 to 200 acres. Stones that are about 1 to 2 feet in diameter and less than 5 feet apart are on the surface. Slopes range from 15 to 25 percent. The unit is about 60 percent deep, well drained Monadnock soils; 25 percent deep, somewhat excessively drained to well drained Hermon soils; and 15 percent other soils. The Monadnock soils mainly are on the smoother parts of the landscape, and the Hermon soils are on the more hummocky parts.

Typically, the Monadnock soils are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Typically, the Hermon soils are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and yellowish red gravelly fine sandy loam 7 inches thick. The lower part of the subsoil is strong brown gravelly sandy loam 8 inches thick and yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and grayish brown very gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are spots of rock outcrop and small areas of Lyman soils on sharp rises and small ridges. Also included, mainly near the bottom

of the slope, are small areas of Sunapee, Lyme, and Moosilauke soils in drainageways and seep spots.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Hermon soils are rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Hermon soils. The depth to bedrock is generally more than 5 feet in both soils, and potential frost action is low in both.

Almost all of the acreage of this unit is wooded. Potential productivity for trees is moderate. Droughtiness is the main limitation for trees on the Hermon soils. The stones on the surface and the slope of the unit limit the use of equipment for logging and forestry management.

Slope and the stones on the surface make these soils generally unsuitable for farming and are the main limitations for community development. Some areas are suitable for wildlife habitat or for some types of recreation.

Capability subclass: VIs.

MrE—Monadnock-Hermon association, very stony, steep. This unit is on the sides of hills and mountains. The areas are long and narrow or irregularly shaped and range from 20 to 200 acres. Stones that are about 1 to 2 feet in diameter and less than 5 feet apart are on the surface. Slopes range from 25 to 50 percent. The unit is about 60 percent deep, well drained Monadnock soils; 25 percent deep, somewhat excessively drained to well drained Hermon soils; and 15 percent other soils. The Monadnock soils generally are on smoother parts of the landscape, and Hermon soils are on the more hummocky parts.

Typically, the Monadnock soils are covered by a thin layer partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Typically, the Hermon soils are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and yellowish red gravelly fine sandy loam 7 inches thick. The lower part of the subsoil is strong brown gravelly sandy loam 8 inches thick and yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and grayish brown very gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are spots of rock

outcrop and small areas of Lyman soils on sharp rises and small ridges. Also included, mainly near the bottom of the slope, are small areas of Sunapee, Lyme, and Moosilauke soils in drainageways and seep spots.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Hermon soils are rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Hermon soils. The depth to bedrock is generally more than 5 feet in both soils, and potential frost action is low in both.

Almost all of the acreage of this unit is wooded. Potential productivity for trees is moderate. Droughtiness is the main limitation for trees on the Hermon soils. The stones on the surface and the slope of the unit limit the use of equipment for logging and forestry management.

Slope and the stones on the surface make these soils generally unsuitable for farming and are the main limitations for community development. Some areas are suitable for wildlife habitat or for some types of recreation.

Capability subclass: VII.

MuD—Monadnock-Hermon association, extremely bouldery, moderately steep. This unit is on the sides of hills and mountains. The areas are long and narrow or irregularly shaped and range from 30 to 200 acres. Stones and boulders cover 30 to 60 percent of the surface and are typically less than 5 feet apart. Slopes range from 15 to 35 percent. The Monadnock soils of this association are on the smoother parts of the landscape, and the Hermon soils are on the more hummocky parts. The unit is about 45 percent deep, well drained Monadnock soils; 30 percent deep, somewhat excessively drained to well drained Hermon soils; and 25 percent other soils.

Typically, the Monadnock soils are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Typically, the Hermon soils are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and yellowish red gravelly fine sandy loam 7 inches thick. The lower part of the subsoil is strong brown gravelly sandy loam 8 inches thick and yellowish brown gravelly loamy sand 4 inches thick. The substratum is light yellowish brown, light brownish gray, and grayish

brown very gravelly sand that extends to a depth of 60 inches or more.

Included with this unit in mapping are spots where stones and boulders cover more than 60 percent of the surface, a few rock outcrops, and small areas of Lyman soils on sharp rises and small ridges. Also included, mainly near the bottom of the slope, are small areas of Sunapee, Lyme, and Moosilauke soils in drainageways and seep spots.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Hermon soils are rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Hermon soils. The depth to bedrock is generally more than 5 feet in both soils, and potential frost action is low in both.

Almost all of the acreage of this unit is wooded. Potential productivity for trees is moderate. Droughtiness is the main limitation for trees on the Hermon soils. The stones on the surface and the slope of the unit limit the use of equipment for logging and forestry management.

Slope and the stones on the surface make these soils generally unsuitable for farming and are the main limitations for community development. Some areas are suitable for wildlife habitat or for some types of recreation.

Capability subclass: VII.

MvB—Monadnock-Lyman stony fine sandy loams, 3 to 8 percent slopes. This unit is on the tops of hills and ridges. It mainly consists of deep, well drained Monadnock soils and shallow, somewhat excessively drained Lyman soils. The areas typically are oblong and range from 10 to 50 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface. The Monadnock and Lyman soils are in such an intricate pattern that it was not practical to map them separately. The Lyman soils generally are at a slightly higher position than the Monadnock soils.

Monadnock soils make up about 45 percent of this unit. Typically, they are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Lyman soils make up about 25 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark brown and brown fine sandy loam about 2 inches thick. The upper part of the subsoil

is dark reddish brown and reddish brown fine sandy loam 6 inches thick. The lower part of the subsoil is dark yellowish brown fine sandy loam 7 inches thick. Hard bedrock is at a depth of 15 inches.

Included with this unit in mapping are spots of moderately deep, loamy soils; very shallow, loamy soils; Marlow and Hermon soils; and Sunapee and Lyme soils in depressions and drainageways. Also included are a few rock outcrops and areas with no stones on the surface. Included areas make up about 30 percent of this unit.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Lyman soils are moderately rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Lyman soils. The Lyman soils have moderate potential frost action and are 8 to 20 inches deep to bedrock. The Monadnock soils are generally more than 5 feet deep to bedrock and have low potential frost action.

Most of the acreage of this unit is wooded. A few areas that have been cleared of stones are used for hay or pasture.

The stones on the surface and the low available water capacity and depth to bedrock in the Lyman soils make this unit generally unsuited to cultivated crops and poorly suited to hay and pasture.

Potential productivity for most tree species on this unit is moderate. The depth to bedrock and available water capacity of the Lyman soils are the main limitations for trees.

The depth to bedrock in the Lyman soils is the main limitation of the unit for community development.

Capability subclass: Vls.

MvC—Monadnock-Lyman stony fine sandy loams, 8 to 15 percent slopes. This unit is on the tops and sides of hills and ridges. It mainly consists of deep, well drained Monadnock soils and shallow, somewhat excessively drained Lyman soils. The areas typically are long and narrow and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface. The Monadnock and Lyman soils are in such an intricate pattern that it was not practical to map them separately. The Lyman soils generally are at a slightly higher position than the Monadnock soils.

Monadnock soils make up about 45 percent of this unit. Typically, they are covered by a thin layer of partially decomposed and decomposed leaves, needles and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam

and gravelly loamy sand that extend to a depth of 60 inches or more.

Lyman soils make up about 25 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark brown and brown fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and reddish brown fine sandy loam 6 inches thick. The lower part of the subsoil is dark yellowish brown fine sandy loam 7 inches thick. Hard bedrock is at a depth of 15 inches.

Included with this unit in mapping are spots of moderately deep, loamy soils; very shallow, loamy soils; Marlow and Hermon soils; and Sunapee and Lyme soils in depressions and drainageways. Also included are a few rock outcrops and areas with no stones on the surface. Included areas make up about 30 percent of this unit.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Lyman soils are moderately rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Lyman soils. The Lyman soils have moderate potential frost action and are 8 to 20 inches deep to bedrock. The Monadnock soils are generally more than 5 feet deep to bedrock and have low potential frost action.

Most of the acreage of this unit is wooded. A few areas that have been cleared of stones are used for hay or pasture.

The stones on the surface and the low available water capacity and depth to bedrock in the Lyman soils make this unit generally unsuited to cultivated crops and poorly suited to hay and pasture.

Potential productivity for most tree species on this unit is moderate. The depth to bedrock and available water capacity of the Lyman soils are the main limitations for trees.

Slope and the depth to bedrock in the Lyman soils are the main limitations of the unit for community development.

Capability subclass: Vls.

MvD—Monadnock-Lyman stony fine sandy loams, 15 to 25 percent slopes. This unit is on the sides of hills and ridges. It consists mainly of deep, well drained Monadnock soils and shallow, somewhat excessively drained Lyman soils. The areas typically are long and narrow and range from 10 to 100 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface. The Monadnock and Lyman soils are in such an intricate pattern that it was not practical to map them separately. The Lyman soils generally are at a slightly higher position than the Monadnock soils.

Monadnock soils make up about 45 percent of this unit. Typically, they are covered by a thin layer of

partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam about 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam about 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Lyman soils make up about 30 percent of this unit. Typically, they are covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark brown and brown fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and reddish brown fine sandy loam 6 inches thick. The lower part of the subsoil is dark yellowish brown fine sandy loam 7 inches thick. Hard bedrock is at a depth of 15 inches.

Included with this complex in mapping are spots of moderately deep, loamy soils; very shallow, loamy soils; Marlow and Hermon soils. Also included are a few rock outcrops and areas with no stones on the surface. Included areas make up about 25 percent of this unit.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Lyman soils are moderately rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Lyman soils. The Lyman soils have moderate potential frost action and are 8 to 20 inches deep to bedrock. The Monadnock soils are generally more than 5 feet deep to bedrock and have low potential frost action.

Nearly all of the acreage of this unit is wooded. A few areas are used for unimproved pasture, but slope and the stones on the surface make the soils generally unsuited to farming.

Potential productivity for most tree species on this unit is moderate. The depth to bedrock and low available water capacity of the Lyman soils are the main limitations for trees. The stones on the surface and slope limit the use of equipment for logging and forestry management and restrict the construction of woodland access roads.

Slope and the depth to bedrock in the Lyman soils are the main limitations for community development.

Capability subclass: VIs.

MwB—Monadnock-Lyman-Rock outcrop complex, 3 to 8 percent slopes. This unit is on the tops of hills and ridges. It consists mainly of deep, well drained Monadnock soils; shallow, somewhat excessively drained Lyman soils; and areas of exposed bedrock that make up about 15 percent of the unit. The areas of the unit typically are oblong and range from 10 to 100 acres. The soils commonly have stones on the surface 1 to 2 feet in diameter and 5 to 20 feet apart. The Monadnock and Lyman soils and areas of exposed rock are in such

an intricate pattern that it was not practical to map them separately. The Lyman soils and areas of exposed bedrock generally are at slightly higher positions than the Monadnock soils.

Monadnock soils make up about 40 percent of this unit. Typically, they are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam about 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam about 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Lyman soils make up 25 percent of this complex. Typically, they are covered by a thin layer of partially decomposed leaves, needles, and twigs. The surface layer is very dark brown and brown fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam about 6 inches thick. The lower part of the subsoil is dark yellowish brown fine sandy loam about 7 inches thick. Hard bedrock is at a depth of 15 inches.

Included with this unit in mapping are spots of moderately deep, loamy soils; very shallow, loamy soils; Marlow and Hermon soils; and Sunapee and Lyme soils in depressions and drainageways. Included areas make up about 20 percent of this unit.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Lyman soils are moderately rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Lyman soils. The Lyman soils have moderate potential frost action and are 8 to 20 inches deep to bedrock. The Monadnock soils are generally more than 5 feet deep to bedrock and have low potential frost action.

The stones on the surface and areas of exposed bedrock make this unit generally unsuitable for farming.

Nearly all of this unit is wooded. Potential productivity for most tree species is moderate. The depth to bedrock and low available water capacity of the Lyman soils are the main limitations for trees. The areas of exposed bedrock limit the use of equipment for logging and forestry management and restrict construction of woodland access roads.

The depth to bedrock in the Lyman soils and the areas of exposed bedrock are the main limitations of the unit for community development.

Capability subclass: VIs.

MwC—Monadnock-Lyman-Rock outcrop complex, 8 to 15 percent slopes. This unit is on the tops and sides of hills, ridges, and mountains. It consists mainly of deep, well drained Monadnock soils; shallow, somewhat

excessively drained Lyman soils, and areas of exposed bedrock that make up about 15 percent of the unit. The areas of the unit typically are long and narrow and range from 10 to 200 acres. The soils commonly have stones on the surface 1 to 2 feet in diameter and 5 to 20 feet apart. The Monadnock and Lyman soils and areas of exposed bedrock are in such an intricate pattern that it was not practical to map them separately. The Lyman soils and areas of exposed rock generally are at slightly higher positions than the Monadnock soils.

Monadnock soils make up about 40 percent of this unit. Typically, they are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Lyman soils make up 25 percent of this unit. Typically, they are covered by a thin layer of partially decomposed leaves, needles, and twigs. The surface layer is very dark brown and brown fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and reddish brown fine sandy loam 6 inches thick. The lower part of the subsoil is dark yellowish brown fine sandy loam 7 inches thick. Hard bedrock is at a depth of 15 inches.

Included with this complex in mapping are spots of moderately deep, loamy soils; very shallow, loamy soils; Marlow and Hermon soils; and Sunapee and Lyme soils in depressions and drainageways. Included soils make up about 20 percent of this unit.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Lyman soils are moderately rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Lyman soils. The Lyman soils have moderate potential frost action and are 8 to 20 inches deep to bedrock. The Monadnock soils are generally more than 5 feet deep to bedrock and have low potential frost action.

The stones on the surface and areas of exposed bedrock make this unit generally unsuitable for farming.

Nearly all of this unit is wooded. Potential productivity for most tree species is moderate. The depth to bedrock and low available water capacity of the Lyman soils are the main limitations for trees. The areas of exposed bedrock limit the use of equipment for logging and forestry management and restrict construction of woodland access roads.

The depth to bedrock in the Lyman soils and the areas of exposed bedrock are the main limitations of the unit for community development.

Capability subclass: VIs.

MwD—Monadnock-Lyman-Rock outcrop complex, 15 to 25 percent slopes. This unit is on the sides of hills, ridges, and mountains. It consists mainly of deep, well drained Monadnock soils; shallow, somewhat excessively drained Lyman soils; and areas of exposed bedrock that make up about 15 percent of the unit. The areas of the unit typically are long and narrow and range from 20 to 200 acres. The soils commonly have stones on the surface 1 to 2 feet in diameter and 5 to 20 feet apart. The Monadnock and Lyman soils and areas of exposed rock are in such an intricate pattern that it was not practical to map them separately. The Lyman soils and areas of exposed rock generally are at slightly higher positions than the Monadnock soils.

Monadnock soils make up about 40 percent of this unit. Typically, they are covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is gray fine sandy loam about 2 inches thick. The upper part of the subsoil is dusky red, yellowish red, and yellowish brown fine sandy loam 11 inches thick. The lower part of the subsoil is light olive brown and olive fine sandy loam 18 inches thick. The substratum is olive gravelly fine sandy loam and gravelly loamy sand that extend to a depth of 60 inches or more.

Lyman soils make up 25 percent of this unit. Typically, they are covered by a thin layer of partially decomposed leaves, needles, and twigs. The surface layer is very dark brown and brown fine sandy loam about 2 inches thick. The upper part of the subsoil is dark reddish brown and reddish brown fine sandy loam 6 inches thick. The lower part of the subsoil is dark yellowish brown fine sandy loam 7 inches thick. Hard bedrock is at a depth of 15 inches.

Included with this unit in mapping are spots of moderately deep, loamy soils; very shallow, loamy soils; and Marlow and Hermon soils. Included soils make up about 20 percent of this unit.

The Monadnock soils in this unit are moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. The Lyman soils are moderately rapidly permeable. Available water capacity is moderate in the Monadnock soils and low in the Lyman soils. The Lyman soils have moderate potential frost action and are 8 to 20 inches deep to bedrock. The Monadnock soils are generally more than 5 feet deep to bedrock and have low potential frost action.

Slope, the stones on the surface, and the areas of exposed rock make this unit generally unsuitable for farming.

Nearly all of the acreage of this unit is wooded. Potential productivity for most tree species is moderate. The depth to bedrock and low available water capacity of the Lyman soils are the main limitations for trees. The stones on the surface, the areas of exposed rock, and slope limit the use of equipment for logging and forestry

management and restrict the construction of woodland access roads.

Slope, the areas of exposed bedrock, and the depth to bedrock in the Lyman soils are the main limitations of the unit for community development.

Capability subclass: VIs.

Na—Naumburg loamy sand. This soil is nearly level and poorly drained and somewhat poorly drained. It is in low-lying areas and in broad depressions on plains and terraces. The areas typically are oblong and range from 5 to 35 acres.

Typically, the upper part of the surface layer is very dark grayish brown loamy sand about 7 inches thick, and the lower part is gray sand about 3 inches thick. The subsoil is mottled sand 23 inches thick. The upper 12 inches is dark reddish brown, strong brown, and yellowish brown; the lower 11 inches is yellowish brown and olive brown. The substratum is mottled, olive and pale olive sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Croghan soils on high spots; areas of very poorly drained, sandy soils in very low spots; and areas of poorly drained gravelly loamy sand. Included soils make up about 25 percent of this unit.

This Naumburg soil is rapidly permeable. Available water capacity is low. The water table is between the surface and a depth of 1.5 feet in wet periods and is at a depth of 4 feet or more in dry periods. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Much of the acreage of this soil is wooded. Some areas are used for hay or pasture.

The high water table makes this soil poorly suited to cultivated crops, but the soil is suited to hay and pasture, especially to water-tolerant grasses and legumes. Artificial surface and subsurface drainage systems help to improve the suitability, but outlets for drainage systems are difficult to establish in some areas.

Potential productivity is moderate for water-tolerant tree species. The water table limits the use of equipment for forestry management and logging; logging is more practical in the winter when the soil is frozen or in the summer when the water table is low.

The water table is the main limitation of this soil for most types of community development. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields. Some areas of this soil are suitable for water retention or for ground-water recharge.

Capability subclass: IVw.

NnA—Ninigret fine sandy loam, 0 to 5 percent slopes. This soil is nearly level to gently sloping and is moderately well drained. It is in broad, depressional

areas in major stream valleys. The areas are oval or irregularly shaped and range from 5 to 20 acres.

Typically, the surface layer is dark brown fine sandy loam about 9 inches thick. The subsoil is about 17 inches thick. It is yellowish brown and light olive brown fine sandy loam that is distinctly mottled in the lower part. The substratum is mottled, olive loamy fine sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are areas of Agawam soils on high spots and areas of Raynham soils in low spots. Also included are spots of Scio soils. Included soils make up about 20 percent of this unit.

This Ninigret soil is moderately rapidly permeable in the surface layer and subsoil and rapidly permeable in the substratum. Available water capacity is moderate. In wet periods, commonly early spring, this soil has a water table at a depth of 1.5 to 3 feet. The depth to bedrock is generally greater than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is used for hay or pasture. A few areas are used for cultivated crops or are wooded. Potential productivity is moderately high for most tree species.

This soil is well suited to hay and pasture crops. The seasonal wetness limits the suitability for cultivated crops. Artificial surface and subsurface drainage systems help to improve suitability for crops, but outlets for drainage systems are difficult to establish in some areas.

The seasonal high water table and moderate frost action potential are the main limitations of the soil for community development. The rapid permeability in the substratum causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IIw.

Of—Ondawa fine sandy loam. This soil is nearly level and well drained. It is on flood plains in stream valleys. The areas typically are long and narrow and range from 5 to 25 acres, and they are subject to occasional flooding.

Typically, the surface layer is very dark grayish brown fine sandy loam about 10 inches thick. The subsoil is light olive brown and olive brown fine sandy loam 26 inches thick. The substratum is light olive brown and olive yellow loamy fine sand and sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are areas of moderately well drained Podunk soils in low spots and areas of excessively drained Sunday soils. Also included are small areas of soils that are less than 20 inches deep to sand or gravelly sand. Included soils make up about 20 percent of this unit.

This Ondawa soil has moderately rapid permeability in the surface layer and subsoil and rapid permeability in the substratum. Available water capacity is moderate. The frequency of flooding ranges from once a year to

once in 10 years or more. The time of flooding is typically in the early spring. The depth to bedrock is generally more than 5 feet. The potential frost action is moderate.

Nearly all of the acreage of this soil is used for cultivated crops or improved hayland. A few small isolated areas are wooded.

This soil is well suited to cultivated crops and to hay and pasture. In low-lying areas flooding is a hazard for cultivated crops, but flooding is least likely to occur in the growing season. Potential productivity is moderate for most tree species.

The flooding hazard is the major limitation of the soil for most types of community development. Some areas are suitable for recreational use or as storage for flood water.

Capability class: I.

Ot—Ossipee mucky peat. This soil is nearly level and very poorly drained. It is in broad, low-lying boggy depressions and drainageways. The areas typically are long and narrow or irregularly shaped and range from 20 to 100 acres.

Typically, the upper layers of this soil consist of very dark gray and dark reddish brown, partially decomposed herbaceous and woody material about 28 inches thick. The substratum is grayish brown silt loam and gray sandy loam that extend to a depth of 60 inches or more.

Included with this soil in mapping are strips of very poorly drained and poorly drained mineral soils, mainly near the boundaries of the unit. Also included are spots of Chocorua and Greenwood soils. Included soils make up about 25 percent of this unit.

The permeability of this Ossipee soil is moderately rapid in the organic part and moderately slow in the substratum. Available water capacity is very high. The water table of this soil is at or near the surface for much of the year and seldom drops below a depth of 6 inches. Water typically is ponded on the surface in the spring. The stability of the organic material is poor, and the material is easily compressed. Potential frost action is high. The depth to bedrock is generally more than 5 feet.

Much of the acreage of this soil is in open wetlands covered by water-tolerant shrubs, grasses, and ferns. Some areas have sparse stands of water-tolerant tree species.

The high water table, poor stability, and potential frost action make this soil generally unsuitable for farming and are the main limitations for nonfarm use other than as wetland wildlife habitat or for storm-water storage or ground-water recharge. Potential productivity is low for most tree species. Drained areas of this soil are suitable for crops, but drainage outlets are difficult to establish in most areas.

Capability subclass: VIIIw.

PcA—Peru loam, 0 to 3 percent slopes. This soil is nearly level and moderately well drained. It is on the tops of smooth, rounded hills and on slightly concave foot slopes of smooth hillsides. The areas typically are rectangular and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The upper part of the subsoil is dark brown and dark yellowish brown loam 4 inches thick. The lower part of the subsoil is mottled, olive brown loam 9 inches thick. The substratum is a very firm and compact layer of mottled, olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Marlow soils on high spots, spots of Sunapee soils, and small areas of Pillsbury soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Peru soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, a water table is perched at a depth of 1 to 2 feet. The depth to bedrock is generally more than 5 feet, but rooting depth is impeded by the substratum. Potential frost action is high.

Most of the acreage of this soil is used for hay or pasture. Some artificially drained areas are used for cultivated crops. A few areas are wooded, and potential productivity is moderately high for most tree species.

This soil is well suited to hay and pasture. The seasonal high water table limits suitability for cultivated crops.

The seasonal high water table, the slow permeability in the substratum, and the high frost action potential are the main limitations of the soil for community development.

Capability subclass: IIw.

PcB—Peru loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is on the tops of smooth, rounded hills and on slightly concave foot slopes of smooth hillsides. The areas typically are rectangular and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The upper part of the subsoil is dark brown and dark yellowish brown loam 4 inches thick. The lower part of the subsoil is mottled, olive brown loam 9 inches thick. The substratum is a very firm and compact layer of mottled, olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Marlow soils on high spots, spots of Sunapee soils, and small areas of Pillsbury soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Peru soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, a water table is perched at a depth of 1 to 2 feet. The depth to bedrock is generally more than 5

feet, but rooting depth is impeded by the substratum. Potential frost action is high.

Most of the acreage of this soil is used for hay or pasture. Some artificially drained areas are used for cultivated crops. A few areas are wooded, and potential productivity is moderately high for most tree species.

This soil is well suited to hay and pasture. The seasonal wetness limits suitability for cultivated crops.

The seasonal high water table, the slow permeability in the substratum, and the high frost action potential are the main limitations of the soil for community development.

Capability subclass: IIw.

PcC—Peru loam, 8 to 15 percent slopes. This soil is sloping and moderately well drained. It is on the sides of smooth, rounded hills and on slightly concave lower side slopes of hilly uplands. The areas typically are rectangular and range from 10 to 30 acres.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The upper part of the subsoil is dark brown and dark yellowish brown loam 4 inches thick. The lower part of the subsoil is mottled, olive brown loam 9 inches thick. The substratum is a very firm and compact layer of mottled, olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Marlow soils on high spots, spots of Sunapee soils, and small areas of Pillsbury soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Peru soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, a water table is perched at a depth of 1 to 2 feet. The depth to bedrock is generally more than 5 feet, but rooting depth is impeded by the substratum. Potential frost action is high.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderately high for most tree species.

This soil is suited to hay and pasture. Slope and the seasonal high water table limit suitability for cultivated crops.

Slope, the seasonal high water table, the slow permeability in the substratum, and the high potential frost action are the main limitations of the soil for community development.

Capability subclass: IIIe.

PeB—Peru stony loam, 0 to 8 percent slopes. This soil is nearly level to gently sloping and is moderately well drained. It is on the tops of smooth, rounded hills and on slightly concave foot slopes of smooth hillsides. The areas typically are irregularly shaped and range from 5 to 50 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray loam about 2 inches thick. The upper part of the subsoil is yellowish red, dark brown, and dark yellowish brown loam 10 inches thick. The lower part of the subsoil is mottled, brown loam 9 inches thick. The substratum is a very firm and compact layer of mottled, olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Marlow soils on high spots, spots of Sunapee soils, and small areas of Pillsbury soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Peru soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, a water table is perched at a depth of 1 to 2 feet. The depth to bedrock is generally more than 5 feet, but rooting depth is impeded by the substratum. Potential frost action is high.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The seasonal high water table, the slow permeability in the substratum, and the high frost action potential are the main limitations of the soil for community development.

Capability subclass: VIs.

PeC—Peru stony loam, 8 to 15 percent slopes. This soil is sloping and moderately well drained. It is on the sides of smooth, rounded hills and on slightly concave lower side slopes of hilly uplands. The areas typically are irregularly shaped and range from 10 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray loam about 2 inches thick. The upper part of the subsoil is yellowish red, dark brown, and dark yellowish brown loam 10 inches thick. The lower part of the subsoil is mottled, brown loam 9 inches thick. The substratum is a very firm and compact layer of mottled, olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Marlow soils on high spots, spots of Sunapee soils, and small areas of Pillsbury soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Peru soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly

early in spring, a water table is perched at a depth of 1 to 2 feet. The depth to bedrock is generally more than 5 feet, but rooting depth is impeded by the substratum. Potential frost action is high.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture, but slope and the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Slope, the seasonal high water table, the slow permeability in the substratum, and the high potential frost action are the main limitations of the soil for community development.

Capability subclass: Vls.

PeD—Peru stony loam, 15 to 25 percent slopes.

This soil is moderately steep and moderately well drained. It is on the sides of smooth, rounded hills and on slightly concave side slopes of hilly uplands. The areas typically are irregularly shaped and range from 10 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of partially decomposed and decomposed leaves, needles, and twigs. The surface layer is very dark brown and light brownish gray loam about 2 inches thick. The upper part of the subsoil is yellowish red, dark brown, and dark yellowish brown loam 10 inches thick. The lower part of the subsoil is mottled, brown loam 9 inches thick. The substratum is a very firm and compact layer of mottled, olive fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Marlow soils on high spots, spots of Sunapee soils, and small areas of Pillsbury soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Peru soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, a water table is perched at a depth of 1 to 2 feet. The depth to bedrock is generally more than 5 feet, but rooting depth is impeded by the substratum. Potential frost action is high.

A few areas of this soil are used for unimproved pasture, but slope and the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. The slope limits the use of equipment for logging and forestry management.

Slope, the seasonal high water table, the slow permeability in the substratum, and the high potential frost action are the main limitations of the soil for community development.

Capability subclass: Vls.

PgA—Pillsbury loam, 0 to 3 percent slopes. This soil is nearly level and poorly drained to somewhat poorly drained. It is on hilly uplands in depressions and shallow drainageways. The areas typically are long and narrow and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The subsoil is mottled, dark grayish brown fine sandy loam 14 inches thick. The substratum is a firm and compact layer of mottled, olive brown fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Peru soils on high spots; spots of Lyme and Moosilauke soils; and small areas of very poorly drained, loamy soils in very low spots. Included soils make up about 25 percent of this unit.

The permeability of this Pillsbury soil is moderate above the substratum and slow in the substratum. Available water capacity is low. The water table is perched above the substratum and is at or near the surface 7 to 9 months of the year. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the water table and the substratum. Potential frost action is high.

Most of the acreage of this soil is used for hay or pasture. A few areas are wooded.

The high water table makes this soil generally unsuited to cultivated crops and poorly suited to hay and pasture. Artificial surface and subsurface drainage systems help to improve the suitability, but outlets for drainage systems are difficult to establish in some areas.

Potential productivity is moderate for water-tolerant tree species on this soil. The water table limits the use of equipment for logging and forestry management. Logging operations are more easily conducted in the winter when the soil is frozen or in the summer when the water table is lower.

The water table, the slow permeability in the substratum, and the high potential frost action are the major limitations of this soil for community development. Some areas are suitable for storage of storm water.

Capability subclass: Illw.

PIA—Pillsbury stony loam, 0 to 3 percent slopes.

This soil is nearly level and poorly drained to somewhat poorly drained. It is on hilly uplands in depressions and shallow drainageways. The areas typically are long and narrow and range from 5 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is black loam about 5 inches thick. The subsoil is mottled, dark grayish brown fine sandy loam 17 inches thick. The substratum is a firm and compact layer of mottled, olive brown fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Peru soils on high spots; spots of Lyme and Moosilauke soils; and small areas of very poorly drained, loamy soils in very low spots. Included soils make up about 25 percent of this unit.

The permeability of this Pillsbury soil is moderate above the substratum and slow in the substratum. Available water capacity is low. The water table is perched above the substratum and is at or near the surface 7 to 9 months of the year. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the water table and the substratum. Potential frost action is high.

The high water table and stones on the surface make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of this soil is wooded, and potential productivity is moderate for water-tolerant tree species. The water table limits the use of equipment for logging and forestry management. Logging operations are more easily conducted in the winter when the soil is frozen or in the summer when the water table is lower.

The water table, the slow permeability in the substratum, and the high potential frost action are the major limitations of this soil for community development. Some areas are suitable for storage of storm water.

Capability subclass: VIIc.

PIB—Pillsbury stony loam, 3 to 8 percent slopes.

This soil is gently sloping and poorly drained to somewhat poorly drained. It is in shallow drainageways and on the lower toe slopes of upland hills. The areas typically are irregularly shaped and range from 10 to 60 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface layer is very dark grayish brown loam about 8 inches thick. The subsoil is mottled, dark grayish brown fine sandy loam 14 inches thick. The substratum is a firm and compact layer of mottled, olive brown fine sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Peru soils on high spots; spots of Lyme and Moosilauke soils; and small areas of very poorly drained, loamy soils in very low spots. Included soils make up about 25 percent of this unit.

The permeability of this Pillsbury soil is moderate above the substratum and slow in the substratum. Available water capacity is low. The water table is perched above the substratum and is at or near the surface 7 to 9 months of the year. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the water table and the substratum. Potential frost action is high.

The high water table and stones on the surface make

this soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of this soil is wooded, and potential productivity is moderate for water-tolerant tree species. The water table limits the use of equipment for logging and forestry management. Logging operations are more easily conducted in the winter when the soil is frozen or in the summer when the water table is lower.

The water table, the slow permeability in the substratum, and the high potential frost action are the major limitations of this soil for community development. Some areas are suitable for storage of storm water.

Capability subclass: VIIc.

Pr—Pits, gravel. This unit consists of areas from which sand and gravel have been removed and used mainly for construction purposes. These areas are mostly on terraces, kames, and eskers. The areas are irregularly shaped and range from about 3 to 70 acres. Most pits have a nearly level floor and steep sides. Some have stones and boulders on the pit floor.

Most areas of this unit are devoid of vegetation, but some of the older areas have sparse stands of grasses, shrubs, and trees. The characteristics of these areas are so variable that onsite investigation is needed to determine the potential of an area for any use.

Capability subclass: not assigned.

PtA—Pittstown silt loam, 0 to 3 percent slopes.

This soil is nearly level and moderately well drained. It is on the tops of smooth, rounded hills and on slightly concave foot slopes of smooth hillsides. The areas typically are rectangular and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is about 13 inches thick. It is light olive brown silt loam that is mottled in the lower part. The substratum is a very firm and compact layer of mottled, olive gray and olive gravelly loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Bernardston soils on high spots and small areas of Stissing soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Pittstown soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is perched at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. Most of the cleared areas are used for hay or pasture. A few artificially drained areas are used for cultivated crops.

This soil is well suited to hay and pasture, but the

water table limits suitability for cultivated crops and hampers or delays tillage and haying.

The slow permeability in the substratum, the seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: IIw.

PtB—Pittstown silt loam, 3 to 8 percent slopes.

This soil is gently sloping and moderately well drained. It is on the tops of smooth, rounded hills and on slightly concave foot slopes of smooth hillsides. The areas typically are rectangular and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is about 13 inches thick. It is light olive brown silt loam that is mottled in the lower part. The substratum is a very firm and compact layer of mottled, olive gray and olive gravelly loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Bernardston soils on high spots and small areas of Stissing soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Pittstown soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is perched at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. Most of the cleared areas are used for hay or pasture. A few artificially drained areas are used for cultivated crops.

This soil is well suited to hay and pasture, but the water table limits suitability for cultivated crops and hampers or delays tillage and haying.

The slow permeability in the substratum, the seasonal wetness, and the moderate potential frost action are the main limitations of this soil for community development.

Capability subclass: IIw.

PtC—Pittstown silt loam, 8 to 15 percent slopes.

This soil is sloping and moderately well drained. It is on the sides of smooth, rounded hills and on slightly concave lower side slopes of hilly uplands. The areas typically are rectangular and range from 5 to 30 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The subsoil is about 13 inches thick. It is light olive brown silt loam that is mottled in the lower part. The substratum is a very firm and compact layer of mottled, olive gray and olive gravelly loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Bernardston soils on high spots and small areas of

Stissing soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Pittstown soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is perched at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Much of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. Most of the cleared areas are used for hay or pasture.

This soil is suited to hay and pasture, but slope and seasonal wetness limit use of the soil for cultivated crops.

The slow permeability in the substratum, slope, the seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: IIIe.

PvB—Pittstown stony silt loam, 3 to 8 percent slopes.

This soil is gently sloping and moderately well drained. It is on the tops of smooth, rounded hills and on slightly concave foot slopes of smooth hillsides. The areas typically are irregularly shaped and range from 5 to 30 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is 18 inches thick. It is light olive brown silt loam that is mottled in the lower part. The substratum is a very firm and compact layer of mottled, olive gray and olive gravelly loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Bernardston soils on high spots and small areas of Stissing soils in low spots. Included soils make up about 20 percent of this unit.

The permeability of this Pittstown soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is perched at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The slow permeability in the substratum, the seasonal wetness, and the moderate potential frost action are the

main limitations of the soil for community development.

Capability subclass: Vls.

PvC—Pittstown stony silt loam, 8 to 15 percent slopes. This soil is sloping and moderately well drained. It is on the sides of smooth, rounded hills and on slightly concave lower side slopes of hilly uplands. The areas typically are irregularly shaped and range from 10 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark grayish brown silt loam about 4 inches thick. The subsoil is 18 inches thick. It is light olive brown silt loam that is mottled in the lower part. The substratum is a very firm and compact layer of mottled, olive gray and olive gravelly loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Bernardston soils on high spots and small areas of Stissing soils in seep spots. Included soils make up about 20 percent of this unit.

The permeability of this Pittstown soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is perched at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the substratum. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The slow permeability in the substratum, slope, the seasonal wetness, and the moderate potential frost action are the main limitations of the soil for community development.

Capability subclass: Vls.

Pw—Podunk fine sandy loam. This soil is nearly level and moderately well drained. It is on low-bottom flood plains in stream valleys. The areas are long and narrow and range from 5 to 25 acres. They are subject to frequent flooding.

Typically, the surface layer is brown fine sandy loam about 10 inches thick. The subsoil is 19 inches thick. It is olive brown and light olive brown fine sandy loam that is mottled in the lower part. The substratum is mottled and extends to a depth of 60 inches or more. It is olive gray, olive, and light olive brown loamy fine sand and sand.

Included with this soil in mapping are areas of Ondawa soils on high spots and areas of Rumney soils in low spots. Also included are spots of moderately well drained, loamy soils that are less than 20 inches deep to

loamy sand or gravelly loamy sand. Included soils make up about 20 percent of this unit.

This Podunk soil is moderately rapidly permeable in the surface layer and subsoil and rapidly permeable in the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is at a depth of 1-1/2 to 3 feet. The frequency of flooding ranges from once a year to once in 3 years. The time of flooding is typically in the early spring and following periods of extended rainfall. The depth to bedrock is generally more than 5 feet. The potential frost action is high.

Much of the acreage of this soil is used for hay or pasture. Some areas have been artificially drained and are used for cultivated crops. A few areas are wooded, and potential productivity is moderately high for most tree species.

This soil is well suited to hay and pasture. The high water table and frequent flooding limit suitability for cultivated crops. Artificial surface and subsurface drainage systems help to improve suitability for crops, but outlets for drainage systems are difficult to establish in some areas. Although flooding is a limitation for farming, it is least likely to occur during the growing season of most annual crops.

Flooding, the high water table, and the high potential frost action are major limitations of the soil for community development. Areas of this soil provide floodwater storage.

Capability subclass: llw.

QsC—Quonset-Warwick gravelly fine sandy loams, 8 to 15 percent slopes. This unit is on kames and eskers and on the sides of terraces. It consists mainly of deep, excessively drained Quonset soils and deep, somewhat excessively drained Warwick soils. The areas are irregularly shaped and range from 10 to 100 acres. The Quonset and Warwick soils are in such an intricate pattern that was not practical to map them separately.

Quonset soils make up about 50 percent of this unit. Typically, they have a surface layer of dark brown gravelly fine sandy loam about 6 inches thick. The upper part of the subsoil is dark yellowish brown gravelly sandy loam 3 inches thick. The lower part of the subsoil is yellowish brown gravelly loamy sand 7 inches thick. The substratum is stratified light olive brown very gravelly sand and olive gray very gravelly coarse sand that extend to a depth of 60 inches or more.

Warwick soils make up about 35 percent of this unit. Typically, they have a surface layer of dark brown gravelly fine sandy loam about 8 inches thick. The subsoil is strong brown and yellowish brown gravelly fine sandy loam 16 inches thick. The substratum is stratified olive and olive gray very gravelly sand that extends to a depth of 60 inches or more.

Included with these soils in mapping are spots of

Windsor and Haven soils that make up about 15 percent of this unit.

The Quonset soils in this unit are rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. The Warwick soils are moderately rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low in the Quonset soils and low to moderate in the Warwick soils. The depth to bedrock is generally more than 5 feet in both soils, and potential frost action is low in both.

Most of the acreage of this unit is wooded. A few cleared areas are used for pasture.

The Quonset soils are poorly suited to farming. The Warwick soils are fairly suited to hay and pasture and poorly suited to cultivated crops. Droughtiness, slope, and an erosion hazard are the major limitations of the soils for crops. Adding manure and plant residue to the soils improves the tilth and available water capacity.

Potential productivity for most tree species is low on the Quonset soils and moderate on the Warwick soils. Droughtiness in both soils is the major limitation for trees.

Slope and the very rapid permeability of the substratum are the main limitations of the soils for community development. The permeability causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IVs.

QsD—Quonset gravelly fine sandy loam, 15 to 35 percent slopes. This soil is moderately steep and excessively drained. It is on kames and eskers and on the sides of terraces. The areas are irregularly shaped and range from 10 to 100 acres.

Typically, the surface layer is dark brown gravelly fine sandy loam about 6 inches thick. The upper part of the subsoil is dark yellowish brown gravelly sandy loam 3 inches thick. The lower part of the subsoil is yellowish brown gravelly loamy sand 7 inches thick. The substratum is stratified light olive brown very gravelly sand and olive gray very gravelly coarse sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are spots of Warwick and Windsor soils that make up about 20 percent of this unit.

This Quonset soil is rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Slope makes this soil generally unsuited to farming and is the major limitation for community development.

Nearly all of the acreage of this soil is wooded, but potential productivity is low for most tree species because of droughtiness. Slope limits the use of

equipment for logging, especially in areas where the slope is more than 25 percent.

Capability subclass: VI_s.

Ra—Raynham silt loam. This soil is nearly level and poorly drained. It is in depressions and low areas. The areas typically are oval and range from 5 to 25 acres.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The upper part of the subsoil is mottled, olive silt loam 7 inches thick. The lower part of the subsoil is mottled, olive gray silt loam 8 inches thick. The substratum is mottled, gray silt loam that extends to a depth of 60 inches or more.

Included in mapping with this soil are small areas of Scio soils on high spots and small areas of very poorly drained soils in very low spots. Included soils make up about 20 percent of this unit.

This Raynham soil is moderately permeable in the surface layer and subsoil and slowly permeable in the substratum. Available water capacity is high. The water table is at a depth of 1/2 foot to 2 feet 6 to 8 months of the year. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Much of the acreage of this soil is used for hay or pasture. A few artificially drained areas are used for cultivated crops. Some areas are wooded.

This soil is suited to hay and pasture, but the water table makes the soil generally unsuited to cultivated crops.

Potential productivity is moderate on this soil for water-tolerant tree species. The water table limits the use of equipment for forestry management and logging. Logging operations are more easily conducted in the winter when the soil is frozen or in the summer when the water table is lower.

The high water table, the slow permeability in the substratum, and the high frost action potential are the main limitations of this soil for community development.

Capability subclass: III_w.

Ro—Rock outcrop. This unit consists of areas where the surface is more than 90 percent bedrock exposures. It mainly is on the sloping to steep higher mountaintops and on very steep mountain cliffs. The areas are irregularly shaped and range from 10 to 600 acres. The largest and most prominent area is on Croydon Mountain.

Included with this unit in mapping are areas where more than 90 percent of the surface is covered with stones and boulders. Also included are small areas of very shallow and shallow soils in cracks and crevices. Included areas make up about 10 percent of this unit.

This unit is unsuitable for most uses, but it has esthetic value.

Capability subclass: not assigned.

Ru—Rumney loam. This soil is nearly level and poorly drained. It is on low-bottom flood plains in stream valleys. The areas typically are long and narrow and range from 5 to 30 acres. This soil is subject to frequent flooding.

Typically, the surface is very dark grayish brown loam about 7 inches thick. The upper part of the substratum is mottled, dark grayish brown and olive gray fine sandy loam and loam about 31 inches thick. The lower part of the substratum is stratified very dark grayish brown loamy sand and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Podunk soils on high spots and small areas of Saco Variant soils in low spots. Also included are spots of poorly drained, loamy soils that are less than 20 inches deep to loamy sand or gravelly loamy sand. Included soils make up about 20 percent of this unit.

This Rumney soil is moderately rapidly permeable in the surface layer and upper part of the substratum and rapidly permeable in the lower part of the substratum. Available water capacity is moderate. In wet periods, commonly early in spring, the water table is at or near the surface. The time of flooding is typically in the early spring and following periods of extended rainfall. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Most of the acreage of this soil is covered with water-tolerant trees, shrubs, and grasses. Some areas have been artificially drained and are used for hay, pasture, and cultivated crops.

The high water table and frequent flooding make this soil poorly suited to farming. Artificial surface and subsurface drainage systems help to improve suitability, but outlets for drainage systems are difficult to establish in some areas.

Potential productivity is moderate on this soil for water-tolerant tree species. The water table and frequent flooding limit the use of equipment for forestry management and logging.

Flooding, the water table, and the potential frost action are the major limitations of the soil for community development. Areas of this soil provide floodwater storage.

Capability subclass: IIIw.

Sa—Saco silt loam. This soil is nearly level and very poorly drained. It is on low-bottom flood plains in major stream valleys. The areas typically are long and narrow and range from 5 to 20 acres. They are subject to flooding commonly more than once a year.

Typically, the surface layer is very dark gray silt loam about 11 inches thick. The upper part of the substratum is mottled, stratified, dark gray silt loam and very fine sandy loam about 37 inches thick. The lower part of the

substratum is dark gray loamy fine sand that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Limerick and Rumney soils and areas of Saco Variant soils. Included soils make up about 20 percent of this unit.

This Saco soil is moderately permeable in the surface layer and upper part of the substratum and rapidly permeable in the lower part of the substratum. Available water capacity is high. The water table is at or near the surface most of the year. Flooding occurs in the early spring and following periods of extended rainfall. The depth to bedrock is generally more than 5 feet. The potential frost action is high.

Most of the acreage of this soil is covered by water-tolerant shrubs, grasses, and ferns. Flooding and the high water table make the soil generally unsuitable for farming and make potential productivity low for most tree species.

Flooding, the high water table, and the frost action potential are the main limitations of the soil for community development. Areas of this soil provide floodwater storage.

Capability subclass: VIw.

Sb—Saco Variant mucky silt loam. This soil is nearly level and very poorly drained. It is on low-bottom flood plains in major stream valleys. The areas typically are long and narrow and range from 5 to 20 acres. Saco Variant soils are subject to flooding commonly more than once a year.

Typically, the surface of this soil is covered by a 2-inch-thick layer of fresh and partially decomposed leaves, ferns, and twigs. The surface layer is very dark grayish brown mucky silt loam about 10 inches thick. The upper part of the substratum is dark gray and very dark gray silt loam about 18 inches thick. The lower part of the substratum is mottled, olive-gray and gray, stratified sand and gravelly loamy sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Rumney and Limerick soils, areas of Saco soils, and areas of very poorly drained, silty soils that are less than 20 inches deep to sand. Included soils make up about 25 percent of this unit.

This Saco Variant soil is moderately permeable in the surface layer and upper part of the substratum and rapidly permeable in the lower part of the substratum. Available water capacity is high. The water table is at or near the surface most of the year. Flooding occurs in the early spring and following periods of extended rainfall. The depth to bedrock is generally more than 5 feet. The potential frost action is high.

Most of the acreage of this soil is covered by water-tolerant shrubs, grasses, and ferns. Flooding and the

high water table make the soil generally unsuitable for farming and make potential productivity low for most tree species.

Flooding, the high water table, and the frost action potential are the main limitations of the soil for community development. Areas of this soil provide floodwater storage.

Capability subclass: VIw.

SdA—Scio silt loam, 0 to 3 percent slopes. This soil is nearly level and moderately well drained. It is on plains and terraces in broad, slightly concave areas. The areas typically are somewhat oval and range from 5 to 20 acres.

Typically, the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil is 20 inches thick. It is olive brown and light olive brown silt loam that is mottled in the lower part. The upper part of the substratum is mottled, olive silt loam 18 inches thick. The lower part of the substratum is stratified, mottled, light olive brown very fine sandy loam and very fine sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are areas of well drained Unadilla Variant soils and poorly drained Raynham soils. Also included are spots of moderately well drained, silty soils that are less than 40 inches deep to stratified sand. Included soils make up about 20 percent of this unit.

This Scio soil is moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. Available water capacity is high. In wet periods, commonly early spring, the water table is at a depth of 1-1/2 to 2 feet. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Most of the acreage of this soil is used for hay or pasture. A few areas are used for cultivated crops. Some areas are wooded, and potential productivity is high for most tree species.

This soil has good suitability for hay and pasture, but the water table limits suitability for cultivated crops. Artificial surface and subsurface drainage systems help to improve the suitability for crops.

The high water table and high frost-action potential are the main limitations of this soil for community development.

Capability subclass: IIw.

SdB—Scio silt loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is on plains and terraces in broad, slightly concave areas. The areas typically are somewhat oval and range from 5 to 20 acres.

Typically, the surface layer is dark grayish brown silt loam about 10 inches thick. The subsoil is 20 inches thick. It is olive brown and light olive brown silt loam that

is mottled in the lower part. The upper part of the substratum is mottled, olive silt loam 18 inches thick. The lower part of the substratum is stratified, mottled, light olive brown very fine sandy loam and very fine sand that extend to a depth of 60 inches or more.

Included with this soil in mapping are areas of well drained Unadilla Variant soils and poorly drained Raynham soils. Also included are spots of moderately well drained, silty soils that are less than 40 inches deep to stratified sand. Included soils make up about 20 percent of this unit.

This Scio soil is moderately permeable in the surface layer and subsoil and moderately rapidly permeable in the substratum. Available water capacity is high. In wet periods, commonly early spring, the water table is at a depth of 1-1/2 to 2 feet. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Most of the acreage of this soil is used for hay or pasture. A few areas are used for cultivated crops. Some areas are wooded, and potential productivity is high for most tree species.

This soil has good suitability for hay and pasture, but the water table and an erosion hazard limit suitability for cultivated crops. Artificial surface and subsurface drainage systems help to improve the suitability for crops.

The water table, slope, and the frost action potential are the main limitations of the soil for community development.

Capability subclass: IIe.

SgA—Stissing silt loam, 0 to 5 percent slopes. This soil is nearly level to gently sloping and is poorly drained. It is on hilly uplands in depressions and shallow drainageways. The areas typically are long and narrow and range from 5 to 25 acres.

Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The subsoil is mottled, olive gray silt loam 12 inches thick. The substratum is a firm and dense layer of mottled, olive gray and dark gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Pittstown soils and very poorly drained, loamy soils. Included soils make up about 20 percent of this unit.

The permeability of this Stissing soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. A seasonal high water table is perched on the substratum within a depth of 2-1/2 feet for 6 to 8 months of the year. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the water table and the substratum. Potential frost action is high.

Most of the acreage of this soil is used for hay or pasture. A few areas are wooded.

The water table makes this soil generally unsuited to

cultivated crops and poorly suited to hay and pasture. Artificial surface and subsurface drainage systems help to improve the suitability for farming, but outlets for drainage systems are difficult to establish in some areas.

The potential productivity of the soil for most water-tolerant tree species is moderate. The water table limits the use of equipment for logging and forestry management. Logging operations are more easily conducted in the winter when the soil is frozen or in the summer when the water table is lower.

The water table, the slow permeability in the substratum, and the frost action potential are the main limitations of the soil for community development. Some areas are suitable for stormwater storage.

Capability subclass: IIIw.

ShA—Stissing stony silt loam, 0 to 3 percent

slopes. This soil is nearly level and poorly drained. It is in depressions and shallow drainageways on hilly uplands. The areas typically are long and narrow and range from 10 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark gray silt loam about 6 inches thick. The subsoil is mottled, olive gray silt loam 13 inches thick. The substratum is a firm and dense layer of mottled, olive gray and dark gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Pittstown soils and very poorly drained, loamy soils. Included soils make up about 20 percent of this unit.

The permeability of this Stissing soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. A seasonal high water table is perched on the substratum within a depth of 2-1/2 feet for 6 to 8 months of the year. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the water table and the substratum. Potential frost action is high.

The water table and the stones on the surface make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture crops.

Nearly all of the acreage of the soil is wooded, and potential productivity is moderate for most water-tolerant tree species. The water table limits the use of equipment for logging and forestry management. Logging operations are more easily conducted in the winter when the soil is frozen or in the summer when the water table is lower.

The water table, the slow permeability in the substratum, and the frost action potential are the main limitations of the soil for community development. Some areas are suitable for stormwater storage.

Capability subclass: VIIs.

ShB—Stissing stony silt loam, 3 to 8 percent

slopes. This soil is gently sloping and poorly drained. It is in shallow drainageways and on lower toe slopes of upland hills. The areas typically are long and narrow and range from 10 to 40 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

Typically, the surface of this soil is covered by a thin layer of fresh and partially decomposed leaves, needles, and twigs. The surface layer is very dark gray silt loam about 6 inches thick. The subsoil is mottled, olive gray silt loam 13 inches thick. The substratum is a firm and dense layer of mottled, olive gray and dark gray silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of moderately well drained Pittstown soils and very poorly drained, loamy soils. Included soils make up about 20 percent of this unit.

The permeability of this Stissing soil is moderate above the substratum and slow in the substratum. Available water capacity is moderate. A seasonal high water table is perched on the substratum within a depth of 2-1/2 feet for 6 to 8 months of the year. The depth to bedrock is generally more than 5 feet, but rooting is impeded by the water table and the substratum. Potential frost action is high.

The water table and the stones on the surface make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Nearly all of the acreage of the soil is wooded, and potential productivity is moderate for most water-tolerant tree species. The water table limits the use of equipment for logging and forestry management. Logging operations are more easily conducted in the winter when the soil is frozen or in the summer when the water table is lower.

The water table, the slow permeability in the substratum, and the frost action potential are the main limitations of the soil for community development.

Capability subclass: VIIs.

SnA—Sunapee fine sandy loam, 0 to 3 percent

slopes. This soil is nearly level and moderately well drained. It is in shallow drainageways and depressions and on slightly concave lower foot slopes of hills. The areas typically are rectangular and range from 5 to 30 acres.

Typically, the surface layer is dark brown fine sandy loam about 7 inches thick. The upper part of the subsoil is strong brown and yellowish brown fine sandy loam 8 inches thick. The lower part of the subsoil is mottled, yellowish brown fine sandy loam 9 inches thick. The substratum is mottled, multicolored gravelly sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hermon and Monadnock soils on high spots, Lyme and

Moosilauke soils in low spots, and Peru soils. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Sunapee soil are moderate. In wet periods, commonly early in spring, the water table is at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderately high for most tree species. A few areas are used for cultivated crops.

This soil is suited to cultivated crops, but seasonal wetness is a limitation. Artificial surface and subsurface drainage systems help to improve the suitability, but outlets for drainage systems are difficult to establish in places. This soil is well suited to hay and pasture, but wetness sometimes hampers spring haying.

The seasonal high water table and moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: IIw.

SnB—Sunapee fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is in shallow drainageways and depressions and on slightly concave lower foot slopes of hills. The areas typically are rectangular and range from 5 to 30 acres.

Typically, the surface layer is dark brown fine sandy loam about 8 inches thick. The upper part of the subsoil is strong brown, dark reddish brown, and yellowish brown fine sandy loam 8 inches thick. The lower part of the subsoil is mottled, yellowish brown fine sandy loam 9 inches thick. The substratum is mottled, multicolored gravelly sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hermon and Monadnock soils on high spots, Lyme and Moosilauke soils in low spots, and Peru soils. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Sunapee soil is moderate. In wet periods, commonly early in spring, the water table is at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is used for hay or pasture. Some areas are wooded, and potential productivity is moderately high for most tree species. A few areas are used for cultivated crops.

This soil is suited to cultivated crops, but seasonal wetness and erosion are limitations. Artificial surface and subsurface drainage systems help to improve the suitability. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas. This soil is well suited to hay and pasture crops,

but wetness sometimes hampers spring haying.

The seasonal high water table and moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: IIw.

SoB—Sunapee stony fine sandy loam, 3 to 8 percent slopes. This soil is gently sloping and moderately well drained. It is in shallow drainageways and depressions and on slightly concave lower foot slopes of hills. The areas typically are irregularly shaped and range from 10 to 50 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

This soil is covered by a thin layer of partially decomposed leaves, needles, and twigs. Typically, the surface layer is black fine sandy loam about 1 inch thick. The subsurface layer is light brownish gray fine sandy loam 2 inches thick. The upper part of the subsoil is red, dark reddish brown, and yellowish brown fine sandy loam 12 inches thick. The lower part of the subsoil is mottled, yellowish brown fine sandy loam 9 inches thick. The substratum is mottled, multicolored gravelly sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hermon and Monadnock soils on high spots, Lyme and Moosilauke soils in low spots, and Peru soils. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Sunapee soil are moderate. In wet periods, commonly early in spring, the water table is at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Most of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. A few areas are used for unimproved pasture, but the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The seasonal high water table and moderate frost-action potential are the main limitations of the soil for community development.

Capability subclass: VI_s.

SoC—Sunapee stony fine sandy loam, 8 to 15 percent slopes. This soil is sloping and moderately well drained. It is in drainageways and on slightly concave lower foot slopes of hills. The areas are irregularly shaped and range from 10 to 50 acres. Stones that are about 1 to 2 feet in diameter and 5 to 30 feet apart are on the surface.

This soil is covered by a thin layer of partially decomposed leaves, needles, and twigs. Typically, the surface layer is black fine sandy loam 1 inch thick. The subsurface is light brownish gray fine sandy loam 2 inches thick. The upper part of the subsoil is red, dark reddish brown, and yellowish brown fine sandy loam 12

inches thick. The lower part of the subsoil is mottled, yellowish brown fine sandy loam 9 inches thick. The substratum is mottled, multicolored gravelly sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Hermon and Monadnock soils on high spots, Lyme and Moosilauke soils in low spots, and Peru soils. Included soils make up about 20 percent of this unit.

The permeability and available water capacity of this Sunapee soil are moderate. In wet periods, commonly early in spring, the water table is at a depth of 1-1/2 to 3 feet. The depth to bedrock is generally more than 5 feet. Potential frost action is moderate.

Nearly all of the acreage of this soil is wooded, and potential productivity is moderately high for most tree species. Slope and the stones on the surface make the soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

The moderate potential frost action, seasonal wetness, and slope are the main limitations of the soil for community development.

Capability subclass: VIs.

Su—Sunday loamy sand. This soil is nearly level and excessively drained. It is on flood plains in major stream valleys. The areas typically are long and narrow and range from 5 to 25 acres, and they are subject to frequent flooding.

Typically, a thin layer of leaves, needles, and twigs covers the surface of this soil. The surface layer is dark brown loamy sand about 5 inches thick. The substratum extends to a depth of 60 inches or more. The upper part is stratified olive brown and light olive brown loamy sand and loamy fine sand. The lower part is stratified olive brown and light olive brown sand.

Included with this soil in mapping are small, long and narrow, depressional areas of Podunk and Rumney soils. Also included are spots of Ondawa soils and spots of gravelly soils. Included soils make up about 20 percent of this unit.

This Sunday soil is rapidly permeable or very rapidly permeable. Available water capacity is low, and the soil is droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Most of the acreage of this soil is wooded or is in brushy unimproved pasture. A few areas are used for hay or pasture.

Droughtiness and flooding make this soil poorly suited to farming. Potential productivity for most tree species is low because of the droughtiness.

The hazard of flooding is the major limitation of the soil for community development. Areas of this soil provide floodwater storage.

Capability subclass: IIIs.

Ub—Udorthents, smoothed. This unit consists of soil material that has been altered by grading and by cutting

and filling. The areas are dominantly nearly level, but along the perimeter of the unit they are typically moderately sloping to very steep.

The unit is in urban areas and near Interstate Highway 89. The areas in urban centers are mostly graded fill. They generally are rectangular and range from about 5 to 15 acres and provide sites for buildings, shopping centers, parking lots, and recreational areas. Some of the areas near Interstate 89 were used for fill material for the construction of the highway. Those areas are irregularly shaped and range from about 5 to 25 acres.

Included with this unit in mapping are areas of broken rock, spent moulding sands, cinders, and pieces of concrete, brick, and metal. In some places pieces of woody material have been mixed with the earthy material during grading.

The permeability of the material in this unit ranges from very rapidly permeable to slowly permeable. The available water capacity of the material ranges from very low to moderate. Depth to bedrock is generally more than 5 feet.

Because of the variability of this unit, onsite investigation is needed to evaluate the potential of the unit for any use.

Capability subclass: not assigned.

UnB—Unadilla Variant silt loam, 3 to 8 percent

slopes. This soil is gently sloping and well drained. It is on the tops of outwash plains and terraces. The areas typically are oval and range from 5 to 25 acres.

Typically, the surface layer is dark brown silt loam about 3 inches thick. The upper part of the subsoil is olive brown and light olive brown silt loam 11 inches thick. The lower part of the subsoil is olive silt loam 10 inches thick. The substratum is olive silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Scio soils, Agawam soils, and well drained, silty and very fine sandy soils that are less than 40 inches deep to stratified sand or loamy sand. Included soils make up about 20 percent of this unit.

This Unadilla Variant soil is moderately permeable in the surface layer and subsoil and moderately slowly permeable in the substratum. Available water capacity is high. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Much of the acreage of this soil is used for hay or pasture. Some areas are used for cultivated crops. Some are wooded, and potential productivity is high for most tree species.

This soil is well suited to hay and pasture. It has fair suitability for truck crops and cultivated crops but is limited by slope and an erosion hazard. Stripcropping, contour plowing, minimum tillage, and using grasses and legumes in the cropping system help to reduce the hazard of erosion in cultivated areas.

The permeability of the substratum and the frost action potential are the main limitations of the soil for community development.

Capability subclass: IIe.

UnC—Unadilla Variant silt loam, 8 to 15 percent slopes. This soil is sloping and well drained. It is on the sides of outwash plains and terraces. The areas typically are long and narrow or irregularly shaped and range from 5 to 35 acres.

Typically, the surface layer is dark brown silt loam about 3 inches thick. The upper part of the subsoil is olive brown and light olive brown silt loam 11 inches thick. The lower part of the subsoil is olive silt loam 10 inches thick. The substratum is olive silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Scio soils, Agawam soils, and well drained, silty and very fine sandy soils that are less than 40 inches deep to stratified sand or loamy sand. Included soils make up about 20 percent of this unit.

This Unadilla Variant soil is moderately permeable in the surface layer and subsoil and moderately slowly permeable in the substratum. Available water capacity is high. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Much of the acreage of this soil is wooded. Most of the cleared acreage is used for hay or pasture.

This soil is fairly suited to hay and pasture, but slope and an erosion hazard make it poorly suited to cultivated crops.

Potential productivity is high for most tree species. Erosion is a concern where this soil is disturbed by heavy logging equipment. Constructing woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas help to control erosion.

Slope, the permeability of the substratum, and the potential frost action are the main limitations of the soil for community development.

Capability subclass: IIIe.

UnE—Unadilla Variant silt loam, 15 to 50 percent slopes. This soil is moderately steep to very steep and is well drained. It is on the sides of plains and terraces. The areas typically are long and narrow or irregularly shaped and range from 15 to 70 acres.

Typically, the surface layer is dark brown silt loam about 3 inches thick. The upper part of the subsoil is olive brown and light olive brown silt loam 11 inches thick. The lower part of the subsoil is olive silt loam 10 inches thick. The substratum is olive silt loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are spots of Agawam soils, Windsor soils, and well drained, silty and very fine sandy soils that are less than 40 inches deep

to stratified sand or loamy sand. Included soils make up about 25 percent of this unit.

This Unadilla Variant soil is moderately permeable in the surface layer and subsoil and moderately slowly permeable in the substratum. Available water capacity is high. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Most of the acreage of this soil is wooded. A few moderately steep areas are used for pasture.

Slope and an erosion hazard make this soil generally unsuited to cultivated crops and poorly suited to hay and pasture.

Potential productivity is high for most tree species. Slope and the erosion hazard, however, limit the use of equipment for logging and forestry management and in some places make its use impractical. Constructing woodland access roads on the contour and seeding and mulching roads, skid trails, and other disturbed areas help to control erosion.

Slope is the major limitation of this soil for community development.

Capability subclass: IVe.

Ur—Urban land. This unit consists of areas where more than 80 percent of the surface is covered by buildings, concrete, asphalt, and other impervious material. Examples of these areas are shopping and business centers, industrial complexes, and parking lots. The unit is in the town of Newport and the City of Claremont. The areas are somewhat rectangular, range from 10 to 80 acres, and are nearly level to moderately sloping.

Included with this unit in mapping are areas of miscellaneous earthy and nonearthy fill material. Also included are spots of loamy soils and a few moderately steep areas. Many of the open spots of earthy fill material and loamy soils have been landscaped and planted with grasses and shrubs.

Onsite investigation is needed to evaluate the potential of this unit for any use.

Capability subclass: not assigned.

WaB—Warwick-Quonset gravelly fine sandy loams, 3 to 8 percent slopes. This unit consists of deep, somewhat excessively drained Warwick soils and deep excessively drained Quonset soils. The soils are on the tops of terraces and plains. The areas are irregularly shaped and range from 5 to 40 acres. The Warwick and Quonset soils are in such an intricate pattern that it was not practical to map them separately.

Warwick soils make up about 50 percent of this complex. Typically, they have a surface layer of dark brown gravelly fine sandy loam about 8 inches thick. The subsoil is strong brown and yellowish brown gravelly fine sandy loam 16 inches thick. The substratum is stratified olive and olive gray very gravelly sand that extends to a depth of 60 inches or more.

Quonset soils make up about 35 percent of this complex. Typically, they have a surface layer of dark brown gravelly fine sandy loam about 6 inches thick. The upper part of the subsoil is dark yellowish brown gravelly sandy loam 3 inches thick. The lower part of the subsoil is yellowish brown gravelly loamy sand 7 inches thick. The substratum is stratified light olive brown very gravelly sand and olive gray very gravelly coarse sand that extend to a depth of 60 inches or more.

Included with this complex in mapping are spots of Haven and Windsor soils. Also included are moderately well drained, sandy and gravelly soils in low areas and drainageways. Included soils make up about 15 percent of this unit.

The Warwick soils of this unit are moderately rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. The Quonset soils are rapidly permeable in the surface layer and subsoil and very rapidly permeable in the substratum. Available water capacity is low to moderate in the Warwick soils and low in the Quonset soils. The depth to bedrock is generally more than 5 feet in both soils, and potential frost action is low in both.

Much of the acreage of this unit is wooded. Some areas are used for hay or pasture.

The Warwick soils are fairly suited to farming, and the Quonset soils are poorly suited to farming. Droughtiness is the major limitation for crops. Adding manure and crop residue to the soil improves tilth and available water capacity.

Potential productivity for most tree species is moderate on the Warwick soils and low on the Quonset soils. Droughtiness is the major limitation for trees.

The very rapid permeability of the substratum of these soils causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IIIs.

WdA—Windsor loamy sand, 0 to 3 percent slopes.

This soil is nearly level and excessively drained. It is on the tops of terraces and outwash plains. The areas typically are oval and range from 5 to 50 acres.

Typically, a thin layer of leaves, needles, and twigs covers the surface of this soil. The surface layer is dark brown loamy sand about 4 inches thick. The upper part of the subsoil is yellowish brown loamy sand 6 inches thick. The lower part of the subsoil is light olive brown and light yellowish brown sand 15 inches thick. The substratum is pale olive sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of Haven and Quonset soils. Also included are small areas of moderately well drained, sandy soils in depressions. Included soils make up about 20 percent of this unit.

This Windsor soil is rapidly permeable. Available water capacity is low, and the soil is droughty. The depth to

bedrock is generally more than 5 feet. Potential frost action is low.

Much of the acreage of this soil is wooded, but potential productivity is low because of droughtiness. Most of the cleared acreage is used for hay or pasture. In some areas this soil is used for residential and industrial development.

This soil is fairly suited to hay and pasture and poorly suited to cultivated crops. Droughtiness and low fertility are the main limitations for farming. Adding manure and crop residue to the soil improves tilth and available water capacity.

The rapid permeability of this soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IIIs.

WdB—Windsor loamy sand, 3 to 8 percent slopes.

This soil is gently sloping and excessively drained. It is on the tops of terraces and outwash plains. The areas typically are oval and range from 5 to 50 acres.

Typically, a thin layer of leaves, needles, and twigs covers the surface of this soil. The surface layer is dark brown loamy sand about 4 inches thick. The upper part of the subsoil is yellowish brown loamy sand 6 inches thick. The lower part of the subsoil is light olive brown and light yellowish brown sand 15 inches thick. The substratum is pale olive sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of Haven and Quonset soils. Also included are small areas of moderately well drained, sandy soils in depressions. Included soils make up about 20 percent of this unit.

This Windsor soil is rapidly permeable. Available water capacity is low, and the soil is droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Much of the acreage of this soil is wooded, but potential productivity is low because of droughtiness. Most of the cleared acreage is used for hay or pasture. In some areas this soil is used for residential and industrial development.

This soil is fairly suited to hay and pasture and poorly suited to cultivated crops. Droughtiness and low fertility are the main limitations for farming. Adding manure and crop residue to the soil improves tilth and available water capacity.

The rapid permeability of this soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: IIIs.

WdC—Windsor loamy sand, 8 to 15 percent slopes. This soil is sloping and excessively drained. It is on the sides of terraces and outwash plains. The areas

typically are long and narrow and range from 10 to 50 acres.

Typically, a thin layer of leaves, needles, and twigs covers the surface of this soil. The surface layer is dark brown loamy sand about 4 inches thick. The upper part of the subsoil is yellowish brown loamy sand 6 inches thick. The lower part of the subsoil is light olive brown and light yellowish brown sand 15 inches thick. The substratum is pale olive sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of Haven and Quonset soils that make up about 20 percent of this unit.

This Windsor soil is rapidly permeable. Available water capacity is low, and the soil is droughty. The depth to bedrock is generally more than 5 feet. Potential frost action is low.

Much of the acreage of this soil is wooded, but potential productivity is low because of droughtiness. Some areas are used for hay or pasture.

Droughtiness, slope, and an erosion hazard make this soil poorly suited to hay and pasture and generally unsuited to cultivated crops.

Slope is the main limitation of this soil for community development. The rapid permeability of the soil causes a hazard of ground-water pollution in areas used for septic tank absorption fields.

Capability subclass: VI_s.

WdE—Windsor loamy sand, 15 to 50 percent slopes. This soil is moderately steep to very steep and is excessively drained. It is on the sides of terraces and outwash plains. The areas typically are long and narrow and range from 20 to 150 acres.

Typically, a thin layer of leaves, needles, and twigs covers the surface of this soil. The surface layer is dark brown loamy sand about 4 inches thick. The upper part of the subsoil is yellowish brown loamy sand 6 inches thick. The lower part of the subsoil is light olive brown and light yellowish brown sand 15 inches thick. The substratum is pale olive sand to a depth of 60 inches or more.

Included with this soil in mapping are areas of Haven and Quonset soils that make up about 20 percent of this unit.

This Windsor soil is rapidly permeable. Available water capacity is low, and the soil is droughty. The depth to bedrock is generally more than 5 feet. Potential frost

action is low.

Nearly all of the acreage of this soil is wooded, but potential productivity is low because of droughtiness. Slope limits the use of equipment for logging and forestry management, makes the soil generally unsuited to farming, and is the main limitation for community development.

Capability subclass: VII_s.

Wn—Winooski silt loam. This soil is nearly level and moderately well drained. It is on low-bottom flood plains and in broad, low depressions in higher lying flood plains. The flood plains are in major stream valleys. The areas of the soil typically are long and narrow and range from 5 to 20 acres. They are subject to frequent flooding.

Typically, the surface layer is very dark grayish brown silt loam about 9 inches thick. The substratum extends to a depth of 60 inches or more. It is olive silt loam and dark grayish brown very fine sandy loam that is mottled with gray and brown.

Included with this soil in mapping are small areas of Hadley and Limerick soils that make up about 15 percent of this unit.

This Winooski soil is moderately permeable. Available water capacity is high. In wet periods, commonly early in spring, the water table is at a depth of 1-1/2 to 3 feet. The time of flooding is typically in the early spring and following periods of extended rainfall. The depth to bedrock is generally more than 5 feet. Potential frost action is high.

Nearly all of the acreage of this soil is used for hay, pasture, or cultivated crops. A few small isolated areas are wooded.

This soil is well suited to hay and pasture. It is suited to cultivated crops; the water table and flooding are the main limitations. Artificial surface and subsurface drainage systems help to improve suitability for crops, but outlets for drainage systems are difficult to establish in places. Although flooding is a limitation, it is least likely to occur in the growing season of most annual crops.

Potential productivity is moderately high for most tree species.

Flooding, the water table, and the high potential frost action are major limitations of the soil for community development. Areas of this soil provide floodwater storage.

Capability subclass: IIw.

prime farmland

Prime farmland is one of several kinds of important farmlands defined by the U.S. Department of Agriculture. It is of major importance in providing the Nation's short- and long-range needs for food and fiber. The supply of high quality farmland is limited, and the U.S. Department of Agriculture recognizes that responsible levels of government, as well as individuals, must encourage and facilitate the use of our Nation's prime farmland with wisdom and foresight.

Prime farmland, as defined by the U.S. Department of Agriculture, is the land that is best suited to producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and moisture supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. Prime farmland produces the highest yields with minimal inputs of energy and economic resources, and farming it results in the least damage to the environment.

Prime farmland may now be in crops, pasture, woodland, or other land, but not urban and built-up land or water areas. It must either be used for producing food or fiber or be available for these uses.

Prime farmland usually has an adequate and dependable supply of moisture from precipitation or irrigation. It also has favorable temperature and growing season and acceptable levels of acidity or alkalinity. It has few or no rocks and is permeable to water and air. Prime farmland is not excessively erodible or saturated with water for long periods and is not flooded during the

growing season. The slope range is mainly from 0 to 8 percent. For more detailed information on the criteria for prime farmland consult the local staff of the Soil Conservation Service.

About 20,500 acres, or 6 percent of Sullivan County, meets the soil requirements for prime farmland. The areas are throughout the county, but most are in the valley areas, primarily the Connecticut River Valley. Prime farmland covers about 27 percent of general soil map unit 1, seven percent of map unit 2, six percent of map unit 3, and five percent of map units 4 and 6. The main crops on this land are hay and silage corn used as feed for dairy cows.

A recent trend in land use in the county has been toward the loss of some prime farmlands to industrial, urban, and other nonfarm uses. The loss of prime farmland to other uses puts pressure on marginal lands, which generally are more erodible, droughty, difficult to cultivate, and usually less productive. Further, since the acreage of prime farmland in the county is small, the loss of even a few small parcels has an impact on the farm community.

Soil map units that make up prime farmland in Sullivan County are listed in table 5. This list does not constitute a recommendation for a particular land use. The extent of each listed map unit is shown in table 4. The location is shown on the detailed soil maps in the back of this publication. The soil qualities that affect use and management are described in the section "Detailed soil map units."

use and management of the soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help avoid soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavior characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as woodland; as sites for buildings, sanitary facilities, highways and other transportation systems, and parks and other recreation facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

crops and pasture

General management needed for crops and pasture is suggested in this section. The crops or pasture plants best suited to the soils, including some not commonly grown in the survey area, are identified; the system of land capability classification used by the Soil Conservation Service is explained; and the estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under "Detailed soil map units." Specific information can be obtained from the local office of the Soil Conservation Service or the Cooperative Extension Service.

In 1978 about 15,100 acres in Sullivan County was used for crops and pasture. Of that acreage, 12,450 acres was used for hay or pasture; 2,500 acres for row crops, mainly silage corn; and 150 acres for vegetables, small fruits, apple orchards, and Christmas-tree plantations. The acreage in crops and pasture, however, has gradually decreased because more land is being used for urban, industrial, and other nonfarm uses.

Erosion is a major concern on most of the cropland and pasture in the survey area. The hazard of soil erosion is related to slope of the soil, position on the landscape, rainfall, and the amount and type of plant cover. Erosion is especially damaging where the slope exceeds 3 percent. The Marlow, Monadnock, Bernardston, and Dutchess soils, for example, have slopes that exceed 3 percent and are erodible. Soils that have a high content of silt and very fine sand and a low content of coarse fragments, such as Unadilla Variant and Agawam soils, are susceptible to erosion, particularly rill and gully erosion. The loss of soil through soil erosion is damaging for several reasons, mainly because it causes a loss of plant nutrients and organic matter in the soil and causes sedimentation of streams.

Soil productivity is generally reduced as the surface layer is lost, and increasing amounts of the subsoil are incorporated into the plow layer. Loss of the surface layer in droughty, sandy and gravelly soils, such as the Adams, Windsor and Colton soils, substantially reduces the available water capacity. Loss of the surface layer by erosion reduces the root zone of two types of soils: (1) the Marlow and Bernardston soils, which have a compact substratum; (2) the Lyman, Kearsarge, and Cardigan soils, which are shallow or moderately deep to bedrock.

Erosion-control practices provide protective cover, reduce runoff, and increase filtration. Practices that help to control erosion are terracing, contour stripcropping, and using a cropping system that employs no-till farming, strip tillage, or stubble mulching. Field terraces and diversion terraces intercept water and decrease the erosive effect of overland flow. Contour stripcropping, in

which alternate rows of row crops and close-growing crops are planted across slope, is effective in reducing erosion. Cropping systems that keep plant cover and crop residues on the soil for extended periods further help in erosion control. *Drainage* is a major management concern for many soils in the county. Some soils, mostly the very poorly drained soils, are naturally so wet that the production of crops is generally not feasible.

Poorly drained and somewhat poorly drained soils are too wet for good crop production in most years. Examples of such soils are Pillsbury and Stissing soils. Artificial drainage, either by open-ditch or tile, and the use of water-tolerant crops are effective measures for farming these soils.

Moderately well drained soils generally cannot be tilled, hayed, or pastured until late spring or early summer, and they are not well suited to early-season crops. The Peru, Pittstown, Sunapee, Croghan, Podunk, Winooski, and Scio soils are moderately well drained. Artificial drainage systems can help increase the suitability of these soils for crops.

Surface stones, boulders, and areas of rock outcrop severely limit the use of soils for crops and pasture in many areas of the county. Virtually all of the upland soils of glacial till origin are naturally stony. Most of the upland soils used for crops and pasture have had the stones and boulders removed from the plow layer. Some of the stony soils have potential for pasture, but the stones interfere with tillage, reseeding, and fertilizing. Planting crops or grazing is often impractical on the very stony and bouldery soils and on those areas that are part rock outcrop.

Tilth is important to the emergence of seedlings and the infiltration of water into the soil. Soils that have good tilth generally have a granular structure and are porous. The addition of organic matter helps to maintain good tilth.

Available water capacity is low in some soils in the county, and those soils are droughty. Adams and Colton soils are examples. The addition of organic matter to these soils helps to improve the available water capacity.

Natural fertility is low in the soils in the county. Most of the soils are naturally very strongly acid or strongly acid and require the addition of lime to raise the pH to levels that are favorable for good plant growth.

Special crops commonly grown in the county are small fruits, vegetables, and apples. The commonly grown small fruits are strawberries, raspberries, and blueberries. The most common commercially grown vegetables are sweet corn, beans, peas, squash, tomatoes and cabbage. Deep, friable soils that have good natural drainage are well suited to small fruits and vegetables. The Monadnock, Haven, Agawam, and Unadilla Variant soils that have slopes of less than 8 percent are in this group, as are irrigated areas of Windsor, Adams, Quonset, and Warwick soils that have slopes of less than 8 percent.

yields per acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 6. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green-manure crops; and harvesting that insures the smallest possible loss.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 6 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Soil Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils.

land capability classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor does it consider possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for woodland and for engineering purposes.

In the capability system, soils are generally grouped at three levels: capability class, subclass, and unit. Only class and subclass are used in this survey. These levels are defined in the following paragraphs.

Capability classes, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and

narrower choices for practical use. The classes are defined as follows:

Class I soils have slight limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w*, *s*, or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

Capability units are soil groups within a subclass. The soils in a capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe-4 or IIIe-6.

The capability classification of each map unit is given in the section "Detailed soil map units."

woodland management and productivity

Woodland covered about 282,000 acres, or 82 percent, of Sullivan County in 1980. The dominant forest cover is mixed northern hardwoods and conifers in the valleys and on the hilly uplands and red spruce and balsam fir on the higher mountains.

Table 7 can be used by woodland owners or forest managers in planning the use of soils for wood crops. Only those soils suitable for wood crops are listed. The table lists the ordination (woodland suitability) symbol for each soil. Soils assigned the same ordination symbol require the same general management and have about the same potential productivity.

The first part of the *ordination symbol*, a number, indicates the potential productivity of the soils for important trees. The number 1 indicates very high productivity; 2, high; 3, moderately high; 4, moderate; and 5, low. The second part of the symbol, a letter, indicates the major kind of soil limitation. The letter *x* indicates stoniness or rockiness; *w*, excessive water in or on the soil; *t*, toxic substances in the soil; *d*, restricted root depth; *c*, clay in the upper part of the soil; *s*, sandy texture; *f*, high content of coarse fragments in the soil profile; and *r*, steep slopes. The letter *o* indicates that limitations or restrictions are insignificant. If a soil has more than one limitation, the priority is as follows: *x*, *w*, *t*, *d*, *c*, *s*, *f*, and *r*.

In table 7, *slight*, *moderate*, and *severe* indicate the degree of the major soil limitations to be considered in management.

Ratings of the *erosion hazard* indicate the risk of loss of soil in well managed woodland. The risk is *slight* if the expected soil loss is small, *moderate* if measures are needed to control erosion during logging and road construction, and *severe* if intensive management or special equipment and methods are needed to prevent excessive loss of soil.

Ratings of *equipment limitation* reflect the characteristics and conditions of the soil that restrict use of the equipment generally needed in woodland management or harvesting. A rating of *slight* indicates that use of equipment is not limited to a particular kind of equipment or time of year; *moderate* indicates a short seasonal limitation or a need for some modification in management or in equipment; and *severe* indicates a seasonal limitation, a need for special equipment or management, or a hazard in the use of equipment.

Seedling mortality ratings indicate the degree to which the soil affects the mortality of tree seedlings. Plant competition is not considered in the ratings. The ratings apply to seedlings from good stock that are properly planted during a period of sufficient rainfall. A rating of *slight* indicates that the expected mortality is less than 25 percent; *moderate*, 25 to 50 percent; and *severe*, more than 50 percent.

Ratings of *windthrow hazard* are based on soil characteristics that affect the development of tree roots and the ability of the soil to hold trees firmly. A rating of *slight* indicates that a few trees may be blown down by normal winds; *moderate*, that some trees will be blown down during periods of excessive soil wetness and strong winds; and *severe*, that many trees are blown

down during periods of excessive soil wetness and moderate or strong winds.

The *potential productivity* of merchantable or *common trees* on a soil is expressed as a *site index*. This index is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that woodland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability.

Trees to plant are those that are suited to the soils and to commercial wood production.

recreation

The soils of the survey area are rated in table 8 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewerlines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation are also important. Soils subject to flooding are limited for recreation use by the duration and intensity of flooding and the season when flooding occurs. In planning recreation facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 8, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or by a combination of these measures.

The information in table 8 can be supplemented by other information in this survey, for example, interpretations for septic tank absorption fields in table 11 and interpretations for dwellings without basements and for local roads and streets in table 10.

Camp areas require site preparation such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but

remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soil over bedrock or a hardpan should be considered.

Paths and trails for hiking, horseback riding, and bicycling should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Golf fairways are subject to heavy foot traffic and some light vehicular traffic. Cutting or filling may be required. The best soils for use as golf fairways are firm when wet, are not dusty when dry, and are not subject to prolonged flooding during the period of use. They have moderate slopes and no stones or boulders on the surface. The suitability of the soil for tees or greens is not considered in rating the soils.

wildlife habitat

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water. Wildlife habitat can be created or improved by planting appropriate vegetation, by maintaining the existing plant cover, or by promoting the natural establishment of desirable plants.

In table 9, the soils in the survey area are rated according to their potential for providing habitat for various kinds of wildlife. This information can be used in planning parks, wildlife refuges, nature study areas, and other developments for wildlife; in selecting soils that are suitable for establishing, improving, or maintaining specific elements of wildlife habitat; and in determining the intensity of management needed for each element of the habitat.

The potential of the soil is rated good, fair, poor, or very poor. A rating of *good* indicates that the element or kind of habitat is easily established, improved, or maintained. Few or no limitations affect management, and satisfactory results can be expected. A rating of *fair*

indicates that the element or kind of habitat can be established, improved, or maintained in most places. Moderately intensive management is required for satisfactory results. A rating of *poor* indicates that limitations are severe for the designated element or kind of habitat. Habitat can be created, improved, or maintained in most places, but management is difficult and must be intensive. A rating of *very poor* indicates that restrictions for the element or kind of habitat are very severe and that unsatisfactory results can be expected. Creating, improving, or maintaining habitat is impractical or impossible.

The elements of wildlife habitat are described in the following paragraphs.

Grain and seed crops are domestic grains and seed-producing herbaceous plants. Soil properties and features that affect the growth of grain and seed crops are depth of the root zone, texture of the surface layer, available water capacity, wetness, slope, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of grain and seed crops are corn, wheat, oats, and barley.

Grasses and legumes are domestic perennial grasses and herbaceous legumes. Soil properties and features that affect the growth of grasses and legumes are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, flood hazard, and slope. Soil temperature and soil moisture are also considerations. Examples of grasses and legumes are fescue, lovegrass, brome grass, clover, and alfalfa.

Wild herbaceous plants are native or naturally established grasses and forbs, including weeds. Soil properties and features that affect the growth of these plants are depth of the root zone, texture of the surface layer, available water capacity, wetness, surface stoniness, and flood hazard. Soil temperature and soil moisture are also considerations. Examples of wild herbaceous plants are bluestem, goldenrod, beggarweed, wheatgrass, and grama.

Hardwood trees and woody understory produce nuts or other fruit, buds, catkins, twigs, bark, and foliage. Soil properties and features that affect the growth of hardwood trees and shrubs are depth of the root zone, the available water capacity, and wetness. Examples of these plants are oak, poplar, cherry, sweetgum, apple, hawthorn, dogwood, hickory, blackberry, and blueberry. Examples of fruit-producing shrubs that are suitable for planting on soils rated *good* are Russian-olive, autumn-olive, and crabapple.

Coniferous plants furnish browse, seeds, and cones. Soil properties and features that affect the growth of coniferous trees, shrubs, and ground cover are depth of the root zone, available water capacity, and wetness. Examples of coniferous plants are pine, spruce, fir, cedar, and juniper.

Shrubs are bushy woody plants. The potential of the soils in this county for this use is not given.

Wetland plants are annual and perennial wild herbaceous plants that grow on moist or wet sites. Submerged or floating aquatic plants are excluded. Soil properties and features affecting wetland plants are texture of the surface layer, wetness, reaction, salinity, slope, and surface stoniness. Examples of wetland plants are smartweed, wild millet, wildrice, saltgrass, cordgrass, rushes, sedges, and reeds.

Shallow water areas have an average depth of less than 5 feet. Some are naturally wet areas. Others are created by dams, levees, or other water-control structures. Soil properties and features affecting shallow water areas are depth to bedrock, wetness, surface stoniness, slope, and permeability. Examples of shallow water areas are marshes, waterfowl feeding areas, and ponds.

The habitat for various kinds of wildlife is described in the following paragraphs.

Habitat for openland wildlife consists of cropland, pasture, meadows, and areas that are overgrown with grasses, herbs, shrubs, and vines. These areas produce grain and seed crops, grasses and legumes, and wild herbaceous plants. The wildlife attracted to these areas include bobwhite quail, pheasant, meadowlark, field sparrow, cottontail, and red fox.

Habitat for woodland wildlife consists of areas of deciduous plants or coniferous plants or both and associated grasses, legumes, and wild herbaceous plants. Wildlife attracted to these areas include wild turkey, ruffed grouse, woodcock, thrushes, woodpeckers, squirrels, gray fox, raccoon, deer, and bear.

Habitat for wetland wildlife consists of open, marshy or swampy shallow water areas. Some of the wildlife attracted to such areas are ducks, geese, shore birds, muskrat, mink, and beaver.

Habitat for rangeland wildlife is not given for soils in this part of the United States.

engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. The ratings are given in the following tables: Building site development, Sanitary facilities, Construction materials, and Water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the "Soil properties" section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils

may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations need to be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, depth to bedrock, hardness of bedrock within 5 to 6 feet of the surface, soil wetness, depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to (1) evaluate the potential of areas for residential, commercial, industrial, and recreation uses; (2) make preliminary estimates of construction conditions; (3) evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; (4) evaluate alternative sites for septic tank absorption fields and sewage lagoons; (5) plan detailed onsite investigations of soils and geology; (6) locate potential sources of gravel, sand, earthfill, and topsoil; (7) plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and (8) predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

building site development

Table 10 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or

maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and small commercial buildings are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrink-swell potential, and organic layers can cause the movement of footings. A high water table, depth to bedrock or to a cemented pan, large stones, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 to 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material, a base of gravel, crushed rock, or stabilized soil material, and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. Depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, frost action potential, and depth to a high water table affect the traffic supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic

matter in the surface layer affect trafficability after vegetation is established.

sanitary facilities

Table 11 shows the degree and the kind of soil limitations that affect septic tank absorption fields and sewage lagoons. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to effectively filter the effluent. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 11 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, depth to bedrock or to a cemented pan, flooding, large stones, and content of organic matter.

Excessive seepage due to rapid permeability of the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if floodwater overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

construction materials

Table 12 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good*, *fair*, or *poor* as a source of roadfill and topsoil. They are rated as a probable or improbable source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. Depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. Depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of

more than 25 percent. They are wet, and the depth to the water table is less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. Sand and gravel are used in many kinds of construction. Specifications for each use vary widely. In table 12, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is up to 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic

matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

water management

Table 13 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, terraces and diversions, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soil and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by depth to a permanent

water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. Depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and potential frost action. Excavating and grading and the stability of ditchbanks are affected by depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, or sulfur. Availability of drainage outlets is not considered in the ratings.

Terraces and diversions are embankments or a combination of channels and ridges constructed across a slope to reduce erosion and conserve moisture by intercepting runoff. Slope, wetness, large stones, and depth to bedrock or to a cemented pan affect the construction of terraces and diversions. A restricted rooting depth, a severe hazard of wind or water erosion, an excessively coarse texture, and restricted permeability adversely affect maintenance.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

soil properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features, listed in tables, are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics. These results are reported in table 17.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classifications, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

engineering index properties

Table 14 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil series and their morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If a soil contains particles coarser than sand, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (2) and the system adopted by the American Association of State Highway and Transportation Officials (7).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as Pt. Soils exhibiting engineering properties of two groups can have a dual classification, for example, SP-SM.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest. The AASHTO classification for soils tested, with group index numbers in parentheses, is given in table 17.

Rock fragments larger than 3 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

physical and chemical properties

Table 15 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, and plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3 bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems, septic tank absorption fields, and construction where the rate of water movement under saturated conditions affects behavior.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per

inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter (up to 4 percent) and on soil structure and permeability. Values of K range from 0.05 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Organic matter is the plant and animal residue in the soil at various stages of decomposition.

In table 15, the estimated content of organic matter of the plow layer is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter of a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

soil and water features

Table 16 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the intake of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Some soils in table 16 are assigned to two hydrologic soil groups. Dual grouping is used for one of two reasons: (1) Some soils have a seasonal high water table but can be drained. In this instance the first letter applies to the drained condition of the soil and the second letter to the undrained condition. (2) In some soils that are less than 20 inches deep to bedrock, the first letter applies to areas where the bedrock is impervious and the second letter to areas where the bedrock is impervious or where bedrock makes up more than 25 percent of the surface area of the soil.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt and water in swamps and marshes are not considered flooding.

Table 16 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions; *common* that it is likely under normal conditions; *occasional* that it occurs on an average of once or less in 2 years; and *frequent* that it occurs on an average of more than once in 2 years. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic

matter content with increasing depth; and absence of distinctive horizons that form in soils that are not subject to flooding.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The depth to a seasonal high water table applies to undrained soils. The estimates are based mainly on the evidence of a saturated zone, namely grayish colors or mottles in the soil. Indicated in table 16 are the depth to the seasonal high water table; the kind of water table—that is, perched, artesian, or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 16.

An apparent water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil. An artesian water table is under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole. A perched water table is water standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are most

susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors creates a severe corrosion environment. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

engineering index test data

Table 17 shows laboratory test data for several pedons sampled at carefully selected sites in the survey area. The pedons are typical of the series and are described in the section "Soil series and their morphology." The soil samples were tested by New Hampshire Department of Public Works and Highways, Materials and Research Division.

The testing methods generally are those of the American Association of State Highway and Transportation Officials (AASHTO) or the American Society for Testing and Materials (ASTM).

The tests and methods are: AASHTO classification—M 145 (AASHTO), D 3282 (ASTM); Unified classification—D 2487 (ASTM); Mechanical analysis—T 88 (AASHTO), D 2217 (ASTM); Liquid limit—T 89 (AASHTO), D 423 (ASTM); Plasticity index—T 90 (AASHTO), D 424 (ASTM); Moisture density, Method A—T 99 (AASHTO), D 698 (ASTM); California bearing ratio—T 193 (AASHTO), D 1883 (ASTM); Shrinkage—T 92 (AASHTO), D 427 (ASTM); Limestone bearing ratio—Florida Highway Standard; Volume change (Abercrombie)—Georgia Highway Standard.

classification of the soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (4). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. In table 18, the soils of the survey area are classified according to the system. The categories are defined in the following paragraphs.

ORDER. Ten soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Entisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (*Aqu*, meaning water, plus *ent*, from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Fluvaquents (*Fluv*, meaning flood plain, plus *aquent*, the suborder of the Entisols that have an aquic moisture regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Fluvaquents.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Mostly the properties are those of horizons below plow depth where there is much biological activity. Among the properties

and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-silty, mixed, nonacid, mesic Typic Fluvaquents.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series.

soil series and their morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. The soil is compared with similar soils and with nearby soils of other series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the Soil Survey Manual (3). Many of the technical terms used in the descriptions are defined in Soil Taxonomy (4). Unless otherwise stated, colors in the descriptions are for moist soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed soil map units."

Adams series

The Adams series consists of deep, excessively drained soils. Adams soils formed in sandy glacial outwash deposits on terraces and outwash plains in major river and stream valleys. Slopes range from 0 to 50 percent.

Adams soils are on the landscape with excessively drained Colton soils, moderately well drained Croghan soils, and poorly drained to somewhat poorly drained Naumburg soils. The Adams soils are not as gravelly as the Colton soils and do not have the mottles in the

subsoil that are typical of the Croghan and Naumburg soils.

Typical pedon of Adams loamy sand, 0 to 3 percent slopes, town of Grantham, 1,000 feet west-northwest of the intersection of the Grantham-Springfield town line and Grantham-Springfield Road:

- O2—2 inches to 0, black (2.5YR 2/0) decomposed leaves, needles, and twigs.
- A2—0 to 3 inches, gray (10YR 5/1) loamy sand; single grain; loose; common fine and few medium roots; very strongly acid; abrupt wavy boundary.
- B21h—3 to 6 inches, very dusky red (2.5YR 2/2) loamy sand; weak fine granular structure; friable; common fine and few medium roots; very strongly acid; clear wavy boundary.
- B22ir—6 to 9 inches, reddish brown (5YR 4/4) and brown (7.5YR 4/4) loamy sand; weak very fine granular structure; very friable; common fine and few medium roots; very strongly acid; clear wavy boundary.
- B23ir—9 to 14 inches, yellowish brown (10YR 5/6) sand; single grain; loose; few fine and medium roots; very strongly acid; clear wavy boundary.
- B3—14 to 18 inches, light olive brown (2.5Y 5/6) sand; single grain; loose; few fine roots; strongly acid; gradual wavy boundary.
- C—18 to 60 inches, pale olive (5Y 6/3) sand; single grain; loose; few fine roots in upper part; strongly acid.

The thickness of the solum ranges from 16 to 30 inches. Gravel content ranges from 0 to 5 percent in the solum and 0 to 10 percent in the C horizon. Unless limed, the soil is very strongly acid to strongly acid throughout.

The A2 horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 1 or 2. Some pedons have an Ap horizon that has hue of 10YR, value of 3 to 5, and chroma of 2. The A horizon is sand or loamy sand.

The B21h horizon has hue of 2.5YR or 5YR, value of 2, and chroma of 1 or 2. The B22ir horizon has hue of 5YR to 10YR, value of 3 to 5, and chroma of 4 to 6. The B23ir horizon has hue of 10YR to 2.5Y, value of 5 or 6, and chroma of 4 to 6. The B horizon is loamy sand, sand, or loamy fine sand.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 or 3. It is sand or coarse sand.

Agawam series

The Agawam series consists of deep, well drained soils. Agawam soils formed in stratified loamy over sandy glacial outwash material on outwash plains and terraces in major stream valleys. Slopes range from 0 to 8 percent.

Agawam soils are on the landscape with and formed in the same kind of material as moderately well drained

Ninigret soils. Agawam soils and well drained Unadilla Variant and Haven soils and excessively drained Windsor soils are on similar landforms. Agawam soils do not have the mottles in the subsoil typical of the Ninigret soils, contain more sand than the Unadilla Variant soils do, contain less sand in the surface layer and subsoil than the Windsor soils do, and have less gravel in the surface layer and subsoil than the Haven soils have.

Typical pedon of an Agawam very fine sandy loam, 3 to 8 percent slopes, Town of Charlestown, North Charlestown area, 4,100 feet southwest of the intersection of the Charlestown and Claremont town line and New Hampshire Route 12A:

- Ap—0 to 8 inches, very dark grayish brown (10YR 3/2) very fine sandy loam; weak fine and medium granular structure; friable; many fine roots; slightly acid; clear smooth boundary.
- B21—8 to 13 inches, dark yellowish brown (10YR 4/4) very fine sandy loam; weak fine and medium granular structure; friable; common fine roots; slightly acid; gradual wavy boundary.
- B22—13 to 24 inches, light olive brown (2.5Y 5/4) very fine sandy loam; weak fine and medium granular structure; friable; few fine roots; slightly acid; clear smooth boundary.
- B3—24 to 36 inches, olive (5Y 5/4) loamy very fine sand; massive; very friable; few fine roots; slightly acid; abrupt smooth boundary.
- IIc1—36 to 45 inches, light olive brown (2.5Y 5/4) loamy sand; single grain; loose; very few fine roots; slightly acid; abrupt smooth boundary.
- IIc2—45 to 53 inches, olive (5Y 5/3) and light olive brown (2.5Y 5/4) sand; single grain; loose; slightly acid; clear smooth boundary.
- IIc3—53 to 60 inches, olive (5Y 5/3) and olive gray (5Y 5/2) sand; single grain; loose; 10 percent fine gravel; slightly acid.

The thickness of the solum ranges from 24 to 36 inches. The content of coarse fragments ranges from 0 to 15 percent in the solum and in the C horizon. In unlimed areas the soil ranges from very strongly to slightly acid throughout.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. It is very fine sandy loam or loam.

The upper part of the B horizon has hue of 10YR to 2.5Y and value and chroma of 4 to 6. The lower part of the B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 3 or 4. The B2 horizon is very fine sandy loam, loam, or fine sandy loam. The B3 horizon is loamy very fine sand or very fine sandy loam. Some pedons do not have a B3 horizon.

The C horizon has hue of 2.5YR to 5Y, value of 3 to 6, and chroma of 1 to 4. It is loamy fine sand, loamy sand, or sand or their gravelly analogs.

Bernardston series

The Bernardston series consists of deep, well drained soils. Bernardston soils formed in compact glacial till derived mainly from dark gray phyllite and schist. They are on drumlins and on the smooth sides of hills. Slopes range from 3 to 50 percent.

Bernardston soils are on the landscape with well drained Dutchess soils, moderately well drained Pittstown soils, and poorly drained Stissing soils. Bernardston soils have a compact substratum, and Dutchess soils do not. The Bernardston soils do not have the mottles in the subsoil that are typical of the Pittstown and Stissing soils.

Typical pedon of a Bernardston silt loam, 8 to 15 percent slopes, town of Cornish, 1.7 miles east of the Connecticut River and 580 feet south of the Plainfield-Cornish town line:

- Ap—0 to 8 inches, dark grayish brown (10YR 4/2) silt loam; weak fine and medium granular structure; very friable; many fine roots; 10 percent rock fragments, mostly gravel and channers, some cobblestones; very strongly acid; clear smooth boundary.
- B21—8 to 18 inches, olive brown (2.5Y 4/4) silt loam; weak fine and medium granular structure; friable; common fine and few coarse roots; 10 percent rock fragments, mostly gravel and channers, some cobblestones; strongly acid; gradual wavy boundary.
- B22—18 to 29 inches, light olive brown (2.5Y 5/4) silt loam; weak medium granular structure; friable; common fine and few coarse roots that decrease with depth; 10 percent rock fragments, mostly gravel and channers, some cobblestones; strongly acid; abrupt smooth boundary.
- Cx—29 to 60 inches, olive gray (5Y 4/2) silt loam; few fine distinct dark brown (7.5YR 4/4) mottles; weak thick platy structure; very firm; 18 percent rock fragments, mostly gravel and channers, some cobblestones; medium acid.

The solum thickness and depth to compact glacial till range from 15 to 30 inches. The solum and underlying material are loam or silt loam or their channery analogs. Rock fragments make up 5 to 30 percent of the soil and are mostly subrounded gravel, channers, and cobblestones. Unless limed, the solum is very strongly acid to medium acid and the underlying material is strongly acid or medium acid.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. In undisturbed areas there is a thin O horizon underlain by a 1- to 3-inch-thick A1 horizon. The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2.

The upper part of the B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. The lower part of the B horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 3 to 6.

The Cx horizon has hue of 5Y or 2.5Y, value of 4 or 5, and chroma of 2 or 3. It is firm or very firm.

Borochemists

Borochemists consists of level, very poorly drained soils that formed in organic material at least 16 inches thick. Borochemists are in broad, low-lying boggy depressions and drainageways that are under water for long periods.

Borochemists and very poorly drained Chocorua, Greenwood, and Ossipee soils are on similar landforms. The composition of the organic material and the depth to mineral material are more variable in Borochemists than in the Chocorua, Greenwood, or Ossipee soils.

Borochemists are variable in composition, and thus a typical pedon is not given.

The thickness of the organic layers is 16 inches to more than 60 inches. The organic material is mainly partially decomposed, very dusky red to black herbaceous and woody materials.

The surface, subsurface, and bottom tiers are mainly hemic material. The fiber content ranges from 40 to 75 percent of the organic volume unrubbed and from 20 to 30 percent rubbed.

The IIC horizon is variable in composition. It ranges from silty clay loam to sand and gravel.

Cardigan series

The Cardigan series consists of moderately deep, well drained soils. Cardigan soils formed in a mantle of glacial till over bedrock. The glacial till was derived mainly from dark gray phyllite and schist. Cardigan soils are on hills and ridges. Slopes range from 3 to 50 percent.

Cardigan soils are on the landscape with shallow Kearsarge soils and deep Dutchess and Bernardston soils, and formed in material similar to that in which those soils formed.

Typical pedon of a Cardigan silt loam in an area of Cardigan-Kearsarge-Rock outcrop complex, 15 to 25 percent slopes, town of Unity, 3,750 feet east of the Charleston-Unity town line and 2,750 feet south of the Claremont-Unity town line:

- O1—2 inches to 1 inch, fresh leaves, needles, and twigs.
- O2—1 inch to 0, partially decomposed leaves, needles, and twigs.
- A1—0 to 4 inches, dark brown (10YR 3/3) silt loam; weak fine granular structure; very friable; many fine and common medium roots; 10 percent rock fragments, mostly channers and cobblestones; very strongly acid; abrupt smooth boundary.
- B21—4 to 8 inches, dark yellowish brown (10YR 4/4) silt loam; weak fine and medium granular structure; very friable; common fine and medium roots; 10 percent rock fragments, mostly channers and cobblestones; very strongly acid; clear wavy boundary.

B22—8 to 22 inches, light olive brown (2.5Y 5/4) silt loam; weak fine and medium granular structure; very friable; common fine and few medium roots; 15 percent rock fragments, mostly channers and cobblestones; strongly acid; clear wavy boundary.

C—22 to 30 inches, dark grayish brown (2.5Y 4/2) silt loam; massive; friable; few fine and medium roots; 15 percent rock fragments, mostly channers and cobblestones; strongly acid; abrupt irregular boundary.

R—30 inches, gray phyllite bedrock.

The solum thickness ranges from 20 to 36 inches. The depth to bedrock ranges from 20 to 40 inches. Rock fragments make up 5 to 30 percent of the solum and 10 to 40 percent of the C horizon and are mostly flat or subrounded. Unless limed, the soil is very strongly to medium acid throughout.

The A1 horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3. Some pedons have an Ap horizon that has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. The A horizon is loam or silt loam or their gravelly or channery analogs.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. The lower part has hue of 10YR to 5Y, value of 4 or 5, and chroma of 4 to 6. The B horizon is silt loam, loam, or very fine sandy loam or their gravelly or channery analogs.

The C horizon has hue of 10YR to 5Y, value of 3 to 5, and chroma of 2 to 4. It is loam, silt loam, very fine sandy loam, or fine sandy loam or their gravelly or channery analogs. In some pedons a 1- to 4-inch-thick layer of weathered bedrock overlies the hard, unweathered bedrock.

Chocorua series

The Chocorua series consists of deep, very poorly drained soils that formed in organic material 16 to 50 inches thick over a sandy mineral substratum. The Chocorua soils are in broad, low-lying boggy depressions and drainageways of glacial outwash plains and terraces. Slopes range from 0 to 2 percent.

Chocorua soils are near poorly drained Lyme soils, poorly drained to somewhat poorly drained Moosilauke and Naumburg soils, and very poorly drained Saco Variant soils. Chocorua soils formed in organic material; Lyme, Moosilauke, Naumburg, and Saco Variant soils formed in mineral material. Chocorua soils and very poorly drained Greenwood and Ossipee soils are on similar landforms. Chocorua soils have a mineral substratum 16 to 50 inches below the surface, and Greenwood soils do not. Chocorua soils have more sand in the substratum than Ossipee soils have.

Typical pedon of Chocorua mucky peat, town of Lempster, 1.4 miles south of East Lempster on NH Route 10, 50 feet west of NH Route 10:

Oe1—0 to 8 inches, dark reddish brown (5YR 3/2) broken face and rubbed mucky peat (hemic material); 50 percent fiber, 30 percent rubbed; weak medium granular structure; slightly sticky; many fine roots; 5 percent woody coarse fragments; very strongly acid; clear smooth boundary.

Oe2—8 to 28 inches, black (5YR 2/1) broken face and dark reddish brown (5YR 2/2) rubbed mucky peat (hemic material); 50 percent fiber, 20 percent rubbed; weak medium granular structure; slightly sticky; 5 percent woody coarse fragments; very strongly acid; abrupt smooth boundary.

Oe3—28 to 33 inches, very dark gray (5YR 3/1) broken face and rubbed mucky peat (hemic material); 40 percent fiber, 20 percent rubbed; massive; slightly sticky; 5 percent woody coarse fragments; very strongly acid; abrupt smooth boundary.

IICg—33 to 60 inches, gray (5Y 5/1) and dark gray (5Y 4/1) sand; single grain, loose; strongly acid.

The thickness of the organic layers ranges from 16 to 50 inches. The organic materials are mainly partly decomposed herbaceous and woody materials. Slightly decomposed woody coarse fragments make up 5 to 15 percent of the organic volume. The Oe layers have broken face hue of 5YR, value of 1 to 3, and chroma of 1 or 2; hue of 2.5YR, value of 2 to 4, and chroma of 2 or 4; and hue of 7.5YR, value of 3, and chroma of 2. Reaction ranges from extremely acid to very strongly acid in the organic part and from very strongly acid to medium acid in the substratum.

The surface tier is mainly hemic materials. The fiber content ranges from about 40 to 60 percent of the organic volume unrubbed and from about 20 to 30 percent rubbed.

The subsurface tier is mainly hemic materials. The fiber content ranges from about 40 to 75 percent of the organic volume unrubbed and from about 20 to 35 percent rubbed.

The IIC horizon has hue of 5Y or 2.5Y, value of 4 to 6, and chroma of 0 to 2. It ranges from loamy fine sand to sand or their gravelly analogs.

Colton series

The Colton series consists of deep, excessively drained soils. These soils formed in sandy and gravelly glacial outwash materials on outwash plains, terraces, kames, and eskers. Slopes range from 0 to 50 percent.

Colton soils are on the landscape with excessively drained Adams soils, moderately well drained Croghan soils, and poorly drained to somewhat poorly drained Naumburg soils. The Colton soils contain more gravel than the Adams soils and do not have the mottles in the subsoil typical of the Croghan and Naumburg soils. Colton soils and Quonset soils are on similar landforms.

The Colton soils contain less sand and coarse fragments of dark gray phyllite than the Quonset soils do.

Typical pedon of Colton sandy loam, 8 to 15 percent slopes, town of Lempster, 1,500 feet east of NH Route 10 and 2,500 feet north of Dodge Brook State Forest boundary:

- A1—0 to 4 inches, dark brown (10YR 4/3) sandy loam; weak fine granular structure; very friable; many fine and common medium roots; 12 percent gravel, 3 percent cobblestones; very strongly acid; abrupt smooth boundary.
- B21ir—4 to 9 inches, strong brown (7.5YR 5/8) gravelly loamy sand; weak fine granular structure; very friable; common fine and medium roots; 25 percent gravel, 5 percent cobblestones; strongly acid; clear wavy boundary.
- B22ir—9 to 18 inches, yellowish brown (10YR 5/8) gravelly loamy sand; single grain; loose; few fine and medium roots; 40 percent gravel, 10 percent cobblestones; strongly acid; clear wavy boundary.
- C—18 to 60 inches, olive yellow (2.5Y 6/6) very gravelly sand; single grain; loose; few fine roots to a depth of 30 inches; 50 percent gravel, 10 percent cobblestones; strongly acid.

The thickness of the solum ranges from 18 to 26 inches. Rock fragments, mostly gravel and cobblestones, make up 15 to 50 percent of the solum and 50 to 75 percent of the C horizon. Unless limed, the soil is extremely acid to very strongly acid in the A horizon and very strongly acid to strongly acid in the B and C horizons.

The A1 or Ap horizon has value of 2 to 4 and chroma of 1 to 3. In places there is a 1- to 4-inch-thick, gray or grayish brown A2 horizon. The A horizon is sandy loam or loamy sand or their gravelly analogs.

The upper part of the B horizon has hue of 5YR or 7.5YR, value of 4 or 5, and chroma of 4 to 8. The lower part has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. Some pedons have a 1- to 2-inch-thick, reddish brown or dark reddish brown B21h horizon above the B21ir horizon. The B horizon is gravelly loamy sand or gravelly sand.

The C horizon has hue of 10YR to 5Y, value of 5 to 7, and chroma of 2 to 6. The C horizon typically is stratified, and the texture of individual layers ranges from very gravelly sand to very cobbly sand.

Croghan series

The Croghan series consists of deep, moderately well drained soils that have a seasonal high water table in wet periods. Croghan soils formed in sandy glacial outwash material in depressions and drainageways of outwash plains and terraces. Slopes range from 0 to 5 percent.

Croghan soils are on the landscape with excessively drained Adams and Colton soils and poorly drained or somewhat poorly drained Naumburg soils.

Typical pedon of a Croghan loamy fine sand, 0 to 5 percent slopes, town of Newport, 1.3 miles south of the intersection of Unity-Newport Road and Witcher Road, 3,000 feet east:

- O1—2 inches to 0, forest litter of fresh and partially decomposed needles and twigs.
- A1—0 to 2 inches, very dark grayish brown (10YR 3/2) loamy fine sand; weak fine granular structure; very friable; many fine and common medium roots; very strongly acid; abrupt smooth boundary.
- A2—2 to 5 inches, grayish brown (10YR 5/2) loamy fine sand; single grain; loose; many fine and common medium roots; strongly acid; abrupt smooth boundary.
- B21ir—5 to 15 inches, yellowish brown (10YR 5/6) loamy sand; single grain; loose; common fine and medium roots; very strongly acid; gradual wavy boundary.
- B22ir—15 to 22 inches, light olive brown (2.5Y 5/6) loamy sand; common fine and medium distinct strong brown (7.5YR 5/6, 5/8) and yellowish brown (10YR 5/6, 5/8) mottles and few fine distinct light grayish brown (2.5Y 6/2) mottles; single grain; loose; very strongly acid; gradual wavy boundary.
- B3—22 to 28 inches, light yellowish brown (2.5Y 6/4) and olive yellow (2.5Y 6/6) loamy sand; common fine and medium distinct yellowish brown (10YR 5/6, 5/8), strong brown (7.5YR 5/6, 5/8), and grayish brown (10YR 5/2) mottles; single grain; loose; few fine roots; very strongly acid; clear wavy boundary.
- C—28 to 60 inches; olive (5Y 5/3) and pale olive (5Y 6/3) sand; common fine and medium distinct yellowish brown (10YR 5/6, 5/8) mottles and few fine distinct grayish brown (10YR 5/2) mottles; single grain; loose; few fine roots; very strongly acid.

The thickness of the solum ranges from 24 to 32 inches. The content of coarse fragments, mostly pebbles, ranges from 0 to 5 percent in the A horizon and from 0 to 10 percent in the B and C horizons. Unless limed, the soil is very strongly acid to medium acid throughout.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. Some pedons have an Ap horizon that has hue of 10YR, value of 2 or 3, and chroma of 3 or 4. The A2 horizon has hue of 10YR or 7.5YR, value of 5 or 6, and chroma of 1 or 2. The A horizon is loamy fine sand or loamy sand.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 3 to 5, and chroma of 4 to 6. The lower part has hue of 10YR or 2.5Y and value and chroma of 4 to 6. The B horizon is loamy fine sand, loamy sand, or sand.

The C horizon has hue of 10YR to 5Y, value of 5 or 6, and chroma of 2 to 4. It is loamy sand or sand, and is not mottled in some pedons.

Dutchess series

The Dutchess series consists of deep, well drained soils on uplands. Dutchess soils formed in glacial till derived mainly from dark gray phyllite and schist. Slopes range from 3 to 50 percent.

Dutchess soils are on the landscape with well drained, moderately deep Cardigan soils; somewhat excessively drained, shallow Kearsarge soils; and well drained, deep Bernardston soils. The Dutchess soils do not have the compact substratum that is typical of the Bernardston soils.

Typical pedon of Dutchess silt loam, 15 to 25 percent slopes, city of Claremont, 1,830 feet north of NH Route 11-103 and 1.75 miles west of the Newport-Claremont Town line:

- Ap—0 to 7 inches, dark brown (10YR 4/3) silt loam; moderate medium granular structure; very friable; many fine roots; 15 percent rock fragments, mostly channers and gravel and some cobblestones; medium acid; clear smooth boundary.
- B21—7 to 17 inches, yellowish brown (10YR 5/6) channery loam; weak medium granular structure; friable; common fine roots; 20 percent rock fragments, mostly channers and gravel and a few cobblestones and stones; strongly acid; gradual wavy boundary.
- B22—17 to 23 inches, light olive brown (2.5Y 5/6) channery loam; weak medium granular structure; friable; common fine roots; 20 percent rock fragments mostly channers and gravel and a few cobblestones and stones; medium acid; gradual wavy boundary.
- B23—23 to 29 inches, light olive brown (2.5Y 5/4) channery loam; weak medium granular structure; friable; few fine roots; 30 percent rock fragments, mostly channers and gravel and some cobblestones and stones; medium acid; gradual wavy boundary.
- C—29 to 60 inches, olive (5Y 5/3) channery sandy loam; massive; friable; very few fine roots; 30 percent rock fragments, mostly channers and gravel and some cobblestones and stones; strongly acid.

The solum thickness ranges from 20 to 36 inches. Rock fragments make up 10 to 30 percent of the A and B horizons and 30 to 50 percent of the C horizon. They are mostly flat or subrounded. Unless limed, the soil ranges from strongly acid to medium acid throughout.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. Some pedons have an A1 horizon that has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The A horizon is loam or silt loam or their channery or gravelly analogs.

The upper part of the B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 4 to 6. The lower part has hue of 10YR to 5Y, value of 4 or 5, and chroma of 4 to 6. The B horizon is loam or silt loam or their channery or gravelly analogs.

The C horizon has hue of 2.5Y or 5Y, value of 3 to 5, and chroma of 2 to 4. It is loam, fine sandy loam, or sandy loam or their channery or gravelly analogs.

Greenwood series

The Greenwood series consists of deep, very poorly drained soils that formed in organic material more than 51 inches thick. Greenwood soils are in broad, low-lying boggy depressions and drainageways. Slopes range from 0 to 2 percent.

Greenwood soils are near poorly drained to somewhat poorly drained Naumburg and Moosilauke soils, poorly drained Lyme soils, and very poorly drained Saco Variant soils. Greenwood soils formed in organic material; Naumburg, Moosilauke, Lyme, and Saco Variant soils formed in mineral material. Greenwood soils and very poorly drained Chocorua and Ossipee soils are on similar landforms. The organic deposits in the Greenwood soils are thicker than those in Chocorua or Ossipee soils.

Typical pedon of Greenwood mucky peat in a sparsely wooded bog, town of Lempster, 0.7 mile north of East Lempster on NH Route 10, 300 feet east of NH Route 10:

- Oe1—0 to 6 inches, very dark brown (10YR 2/2) broken face, black (10YR 2/1) rubbed mucky peat (hemic material); 50 percent fiber, 25 percent rubbed; weak coarse granular structure; slightly sticky; many fine roots; 2 percent woody fragments; very strongly acid; clear smooth boundary.
- Oe2—6 to 16 inches, dark reddish brown (5YR 3/2) broken face and rubbed mucky peat (hemic material); 40 percent fiber, 20 percent rubbed; weak medium and coarse granular structure; slightly sticky; few fine roots; 2 percent woody fragments; strongly acid; clear smooth boundary.
- Oe3—16 to 27 inches, dark reddish brown (5YR 3/2) broken face and rubbed mucky peat (hemic material); 70 percent fiber, 25 percent rubbed; massive; slightly sticky; 3 percent woody fragments; strongly acid; clear smooth boundary.
- Oe4—27 to 56 inches, dark reddish brown (5YR 3/2) broken face and rubbed mucky peat (hemic material); 80 percent fiber, 35 percent rubbed; massive; slightly sticky; 5 percent woody fragments; strongly acid; abrupt smooth boundary.

Oe5—56 to 72 inches, very dark grayish brown (10YR 3/2) broken face, very dark grayish brown (2.5Y 3/2) rubbed mucky peat (hemic material); 75 percent fiber, 50 percent rubbed; massive; slightly sticky; strongly acid.

The thickness of the organic layers is more than 51 inches. The organic material is mainly herbaceous and woody materials. Slightly decomposed woody coarse fragments make up 15 percent or less of the volume. The Oe layers have broken face hue of 10YR to 5YR, value of 2 or 3, and chroma of 1 to 3. Reaction ranges from extremely acid to strongly acid.

The surface tier is mainly hemic material. In some pedons there is a surface layer, 3 to 10 inches thick, of fibric materials derived mostly from sphagnum moss. The fiber content of the hemic material ranges from about 40 to 80 percent of the organic volume unrubbed and from about 20 to 50 percent rubbed.

The subsurface tier is mainly hemic material. The fiber content ranges from about 40 to 80 percent of the organic materials unrubbed and from about 20 to 50 percent rubbed.

The bottom tier is mainly hemic material. Fibric or sapric layers less than 10 inches thick are in some pedons. The fiber content of the hemic material ranges from about 30 to 80 percent unrubbed and from 10 to 50 percent rubbed.

Hadley series

The Hadley series consists of deep, well drained soils that are subject to flooding. The soils formed in stratified alluvial deposits on flood plains in major stream valleys. Slopes range from 0 to 3 percent.

Hadley soils are on the landscape with moderately well drained Winooski soils, poorly drained Limerick soils, and very poorly drained Saco soils. The Hadley soils and well drained Ondawa soils are on similar landscape positions, but the Hadley soils contain more silt and very fine sand than the Ondawa soils do.

Typical pedon of a Hadley silt loam, occasionally flooded, in a cultivated field, town of Cornish, 1/2 mile from the Cornish-Windsor bridge north on NH Route 12A, 100 feet west of NH Route 12A, adjacent to the Connecticut River:

- Ap—0 to 7 inches, very dark grayish brown (2.5Y 3/2) silt loam; light brownish gray (2.5Y 6/2) dry; weak fine granular structure; very friable; many fine roots; medium acid; clear smooth boundary.
- C1—7 to 12 inches, dark grayish brown (10YR 4/2) silt loam; massive; very friable; many fine roots; lenses 1/4 to 1 inch thick of light olive gray (5Y 6/2) and pale olive (5Y 6/3) fine sand; slightly acid; clear smooth boundary.

C2—12 to 24 inches, dark grayish brown (2.5Y 4/2) silt loam; massive; very friable; common fine roots; slightly acid; clear smooth boundary.

C3—24 to 34 inches, light olive brown (2.5Y 5/4) and olive (5Y 5/3) silt loam; massive; friable; few fine roots; neutral; clear smooth boundary.

C4—34 to 41 inches, olive (5Y 5/3) very fine sandy loam; massive; friable; neutral; abrupt smooth boundary.

C5—41 to 60 inches olive (5Y 5/3) loamy fine sand; massive; very friable; neutral.

The soil is silt loam or very fine sandy loam to a depth of 40 inches and ranges from silt loam to fine sand at a depth of more than 40 inches. In some pedons there are thin strata or lenses of loamy fine sand, very fine sand, and fine sand. Reaction is strongly acid to neutral throughout.

The Ap horizon has hue of 10YR to 5Y, value of 3 or 4, and chroma of 2 to 4. Dry value is 6 or 7.

Individual layers of the C horizon have hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4.

Haven series

The Haven series consists of deep, well drained soils that formed in stratified loamy over sandy and gravelly glacial outwash. Haven soils are on outwash plains, terraces, kames, and eskers. Slopes range from 0 to 15 percent.

Haven soils and excessively drained Windsor and Quonset soils, somewhat excessively drained Warwick soils, and well drained Agawam soils formed in similar types of material and are near each other. The Haven soils contain less sand and gravel in the surface layer and subsoil than the Quonset soils, contain less sand in the surface layer and subsoil than the Windsor soils, contain less gravel and sand in the subsoil than the Warwick soils, and contain more gravel in the solum than the Agawam soils.

Typical pedon of Haven very fine sandy loam, 0 to 3 percent slopes, town of Charlestown, 1,700 feet west-northwest of the junction of NH Routes 12 and 12A:

- Ap—0 to 9 inches, dark brown (10YR 3/3) very fine sandy loam; weak fine and medium granular structure; very friable; many fine roots; 5 percent gravel; medium acid; abrupt smooth boundary.
- B21—9 to 13 inches, light olive brown (2.5Y 5/6) very fine sandy loam; weak fine and medium granular structure; friable; common fine roots; 5 percent gravel; medium acid; gradual wavy boundary.
- B22—13 to 20 inches, light olive brown (2.5Y 5/4) very fine sandy loam; weak medium granular structure; friable; common fine roots; 5 percent gravel; medium acid; abrupt smooth boundary.

IIC1—20 to 24 inches; light olive brown (2.5Y 5/4) gravelly loamy sand; single grain; loose; few fine roots; 20 percent gravel; medium acid; abrupt smooth boundary.

IIC2—24 to 60 inches, light olive brown (2.5Y 5/4) and olive (5Y 5/3, 5/4) stratified very gravelly sand; single grain; loose; few fine roots to a depth of 30 inches; 45 percent gravel, 20 percent cobbles; medium acid.

The solum thickness and depth to stratified sand and gravel range from 18 to 30 inches. Coarse fragments, mostly gravel, make up 2 to 15 percent of the solum and 20 to 65 percent of the C horizon. Unless limed, the soil is very strongly to medium acid throughout.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Some pedons have an A1 horizon that has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The A horizon is loam, very fine sandy loam, or silt loam.

The B horizon has hue of 2.5Y to 7.5YR in the upper part and 2.5Y or 10YR in the lower part, and has value and chroma of 4 to 6. It is very fine sandy loam, loam, or silt loam.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6. Individual strata range from gravelly or very gravelly loamy sand to gravelly or very gravelly coarse sand.

Hermon series

The Hermon series consists of deep, somewhat excessively drained to well drained soils on hills and mountains. Hermon soils formed in stony, loamy over sandy glacial till. Slopes range from 3 to 50 percent.

Hermon soils are on the landscape with well drained Monadnock and Marlow soils; somewhat excessively drained, shallow Lyman soils; moderately well drained Sunapee soils; poorly drained Lyme soils; and poorly drained to somewhat poorly drained Moosilauke soils. The Hermon soils have more rock fragments and contain more sand in the subsoil and substratum than the Monadnock soils. The Hermon soils contain more rock fragments than the Marlow soils and do not have the compact substratum which is a characteristic of the Marlow soils.

Typical pedon of Hermon fine sandy loam, in an area of Hermon stony fine sandy loam, 15 to 25 percent slopes, town of Croydon, Croydon Flat area, 1 mile north of Croydon Flat on NH Route 10, 300 feet west of NH Route 10:

O1—2 inches to 1 inch, fresh and partially decomposed leaves, needles, and twigs.

O2—1 inch to 0, black (5YR 2/1) decomposed leaves, needles, and twigs.

A1—0 to 1 inch, very dark brown (10YR 2/2) fine sandy loam; weak fine granular structure; very friable; common fine and medium and few coarse roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; abrupt smooth boundary.

A2—1 inch to 2 inches, light brownish gray (10YR 6/2) fine sandy loam; weak fine granular structure; very friable; common fine and medium and few coarse roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; abrupt broken boundary.

B21hir—2 to 4 inches, dark reddish brown (5YR 3/4) gravelly fine sandy loam; weak fine granular structure; very friable; common fine and medium and few coarse roots; 35 percent rock fragments of gravel, cobblestones, and stones; strongly acid; clear wavy boundary.

B22ir—4 to 9 inches, yellowish red (5YR 5/6) gravelly fine sandy loam; weak fine granular structure; very friable; common fine and few medium and coarse roots; 35 percent rock fragments of gravel, cobblestones, and stones; strongly acid; clear wavy boundary.

B23ir—9 to 17 inches, strong brown (7.5YR 5/6) gravelly sandy loam; weak fine granular structure; very friable; common fine and few medium and coarse roots; 35 percent rock fragments of gravel, cobblestones, and stones; strongly acid; gradual wavy boundary.

B3—17 to 21 inches, yellowish brown (10YR 5/6) gravelly loamy sand; weak fine granular structure; very friable; few fine medium and coarse roots; 45 percent rock fragments of gravel, cobblestones, and stones; strongly acid; clear wavy boundary.

C1—21 to 39 inches, light yellowish brown (2.5Y 6/4) very gravelly sand; single grain; loose; few fine medium and coarse roots; 60 percent rock fragments of gravel, cobblestones, and stones; strongly acid; clear wavy boundary.

C2—39 to 60 inches, light brownish gray (2.5Y 6/2) and grayish brown (2.5Y 5/2) very gravelly sand; single grain; loose; few fine and medium roots; 60 percent rock fragments of gravel, cobblestones, and stones; strongly acid.

The solum thickness ranges from 15 to 30 inches. Rock fragments make up 15 to 50 percent of the solum and 30 to 60 percent of the C horizon. Unless limed, the A horizon is extremely acid to strongly acid, the B horizon is extremely acid to medium acid, and the C horizon strongly acid or medium acid.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 to 3. The A2 horizon is neutral with value of 5 to 7 or has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 or 2. Some pedons do not have an A2 horizon, or it is discontinuous. Some pedons have an Ap horizon that has hue of 10YR, value of 3 or 4, and

chroma of 2 or 3. The A horizon is fine sandy loam or sandy loam or their gravelly analogs.

The B21_h horizon has hue of 2.5YR to 7.5YR, value of 2 to 5, and chroma of 1 to 4. Some pedons do not have a B21_h horizon, or it is discontinuous. The B22_h horizon has hue of 5YR to 10YR, value of 3 to 6, and chroma of 4 to 8. The B23_h and B3 horizons have hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. The B2 horizon is gravelly or very gravelly fine sandy loam, sandy loam or loamy sand. The B3 horizon is gravelly or very gravelly loamy sand.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. It is gravelly or very gravelly loamy sand or gravelly or very gravelly sand.

Kearsarge series

The Kearsarge series consists of shallow, somewhat excessively drained soils on hills and ridges. Kearsarge soils formed in a thin mantle of glacial till over bedrock. The glacial till is derived mainly from dark gray phyllite and schist. Slopes range from 3 to 50 percent.

Kearsarge soils and moderately deep Cardigan soils and deep Dutchess soils formed in similar types of material and are near each other.

Typical pedon of a Kearsarge silt loam, in an area of Cardigan-Kearsarge-Rock outcrop complex, 15 to 25 percent slopes, town of Unity, 3,760 feet east of the Charlestown-Unity town line and 2,750 feet south of the Claremont-Unity town line:

- O1—2 inches to 1 inch, fresh leaves, needles, and twigs.
- O2—1 inch to 0, partially decomposed leaves, needles, and twigs.
- A1—0 to 4 inches, dark brown (10YR 3/3) silt loam; weak fine granular structure; very friable; many fine and few medium roots; 7 percent rock fragments, mostly channers; very strongly acid; abrupt smooth boundary.
- B21—4 to 6 inches, dark yellowish brown (10YR 4/4) silt loam; weak fine granular structure; very friable; common fine and few medium roots; 7 percent rock fragments, mostly channers; very strongly acid; clear smooth boundary.
- B22—6 to 17 inches, light olive brown (2.5Y 5/4) silt loam; weak fine granular structure; very friable; few fine and medium roots; 15 percent rock fragments, mostly channers and cobblestones; very strongly acid; abrupt smooth boundary.
- R—17 inches, gray phyllite bedrock.

The solum thickness and depth to bedrock range from 10 to 20 inches. Rock fragments make up 5 to 30 percent of the soil and are mostly flat or subrounded. Unless limed, the soil is very strongly acid to medium acid throughout.

The A1 horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 1 to 3. Some pedons have an Ap

horizon that has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. The A horizon is loam or silt loam or their gravelly or channery analogs.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 6. The lower part has hue of 10YR to 5Y, value of 4 or 5, and chroma of 4 to 6. The B horizon is silt loam, loam, or very fine sandy loam or their gravelly or channery analogs.

In some pedons there is a 1- to 4-inch-thick layer of weathered bedrock that overlies the hard, unweathered bedrock.

Limerick series

The Limerick series consists of deep poorly drained soils that have a water table at a depth of 1/2 to 1 foot during the wet periods of the year. Limerick soils are subject to frequent flooding. They formed in stratified alluvial deposits on low-lying flood plains in major stream valleys. Slopes range from 0 to 2 percent.

Limerick soils are on the landscape with moderately well drained Winoski soils and very poorly drained Saco soils. Limerick soils and poorly drained Rumney soils are on similar landscape positions, but the Limerick soils contain more silt and very fine sand than the Rumney soils do.

Typical pedon of a Limerick silt loam, city of Claremont, 2,200 feet north of the confluence of Meadowbrook and the Connecticut River, 75 feet east of Meadowbrook:

- Ap—0 to 8 inches, dark olive gray (5Y 3/2) silt loam, light olive gray (5Y 6/2) dry; few fine prominent yellowish red (5YR 5/6) mottles; moderate medium granular structure; friable; many fine roots; slightly acid; abrupt smooth boundary.
- C1g—8 to 30 inches, dark gray (5Y 4/1) silt loam; common fine and medium prominent red (2.5YR 5/6) and yellowish red (5YR 4/6) mottles; massive; friable; few fine roots in the upper part; few elongated sandy loam lenses with yellowish brown (10YR 5/6) exteriors and light olive gray (5Y 6/2) interiors; slightly acid; clear smooth boundary.
- C2g—30 to 40 inches; olive gray (5Y 4/2) silt loam; common fine and medium prominent strong brown (7.5YR 5/8) and yellowish brown (10YR 5/8) mottles; massive; friable; 2-inch-thick lense of olive gray (5Y 4/2) gravelly sandy loam; neutral; abrupt smooth boundary.
- C3g—40 to 60 inches, gray (5Y 5/1) silt loam; common medium prominent gray (N 4/0) and yellowish brown (10YR 5/6) mottles; massive; friable; neutral.

The texture to a depth of 40 inches mainly is silt loam or very fine sandy loam. At more than 40 inches, it ranges from silt loam to fine sand. In some pedons there are thin coarser textured strata or lenses at a depth of

more than 10 inches. Reaction ranges from medium acid to neutral.

The A horizon has hue of 10YR through 5Y, value of 3 or 4, and chroma of 2 or 3.

The C horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 1 or 2. Mottles range from few to many and from faint to prominent.

Lyman series

The Lyman series consists of shallow, somewhat excessively drained soils on hills, ridges, and mountains. Lyman soils formed in a thin mantle of stony loamy glacial till over bedrock (fig. 8). Slopes range from 3 to 50 percent.

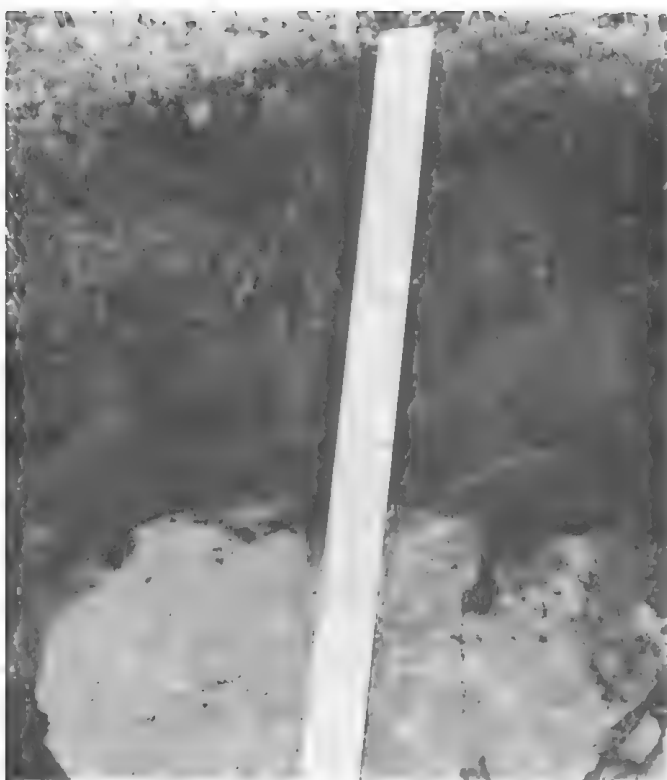


Figure 8.—This profile of the Lyman soils shows the depth to bedrock. The measurements on the tape are in inches.

Lyman soils and deep Monadnock, Hermon, and the Marlow soils formed in the same types of material and are on the landscape together.

Typical pedon of a Lyman fine sandy loam in an area of Monadnock-Lyman stony fine sandy loams, 8 to 15 percent slopes, town of Washington, 1.6 miles southeast of the village of Washington:

O1—3 inches to 1 inch, fresh and partially decomposed leaves, needles, and twigs.

O2—1 inch to 0, decomposed leaves, needles, and twigs.

A1—0 to 1 inch, very dark brown (10YR 2/2) fine sandy loam; weak fine and medium granular structure; very friable; many fine common medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobbles, some stones; very strongly acid; abrupt smooth boundary.

A2—1 inch to 2 inches, brown (7.5YR 5/2) fine sandy loam; weak fine and medium granular structure; very friable; many fine common medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobbles, some stones; very strongly acid; abrupt broken boundary.

B21_{hir}—2 to 4 inches, dark reddish brown (5YR 3/3) fine sandy loam; weak fine and medium granular structure; friable; many fine common medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobbles, some stones; very strongly acid; clear wavy boundary.

B22_{ir}—4 to 8 inches, reddish brown (5YR 4/4) fine sandy loam; weak fine and medium granular structure; friable; common fine and medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobbles, some stones; very strongly acid; clear wavy boundary.

B23—8 to 15 inches, dark yellowish brown (10YR 4/4) fine sandy loam; weak fine and medium granular structure; friable; common fine and medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobbles, some stones; very strongly acid; abrupt smooth boundary.

R—15 inches, granitic gneiss bedrock.

The solum thickness and depth to bedrock range from 8 to 20 inches. Rock fragments make up 10 to 30 percent of the soil. Unless limed, the soil is very strongly acid to medium acid throughout.

The A1 horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The A2 horizon has hue of 7.5YR to 10YR, value of 4 to 6, and chroma of 1 or 2. Some pedons do not have an A2 horizon, or it is discontinuous. The A horizon is loam or fine sandy loam or their gravelly or channery analogs.

The B21_{hir} horizon has hue of 2.5YR to 7.5YR, value of 2 to 4, and chroma of 2 to 6. Some pedons do not have a B21_{hir} horizon, or it is discontinuous. The B22_{ir} horizon has hue of 5YR to 10YR, value of 3 or 4, and chroma of 3 to 8. The B23 horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 or 4. The B horizon is loam, fine sandy loam, or sandy loam or their gravelly or channery analogs.

Lyme series

The Lyme series consists of deep, poorly drained soils that have a water table at or near the surface 6 to 8 months of the year. Lyme soils formed in loamy glacial till. They are in low depressions and low, shallow drainageways. Slopes range from 0 to 8 percent.

Lyme soils are near well drained Monadnock soils, well drained to somewhat excessively drained Hermon soils, moderately well drained Sunapee soils and poorly drained to somewhat poorly drained Pillsbury soils. Lyme soils do not have dense glacial till substratum, which is a characteristic of the Pillsbury soils. Lyme soils are on the landscape with poorly drained to somewhat poorly drained Moosilauke soils but contain less sand in the substratum than the Moosilauke soils.

Typical pedon of a Lyme loam in an area of Lyme-Moosilauke stony loams, 0 to 3 percent slopes, town of Lempster, 4,000 feet north of the intersection of Sand Pond Road and the Lempster-Marlow town line, in woods:

O2—1 inch to 0, partially decomposed needles and twigs.

A1—0 to 7 inches, very dark grayish brown (10YR 3/2) loam; weak medium granular structure; very friable; many fine common medium and few coarse roots; 5 percent gravel, 5 percent cobblestones, 10 percent stones; very strongly acid; abrupt smooth boundary.

B21g—7 to 12 inches, grayish brown (2.5Y 5/2) gravelly sandy loam; many fine and medium distinct gray (5Y 5/1), grayish brown (10YR 5/2), and yellowish brown (10YR 5/6) mottles; weak fine and medium granular structure; very friable; few fine roots; 10 percent gravel, 10 percent cobblestones, 5 percent stones; very strongly acid; clear smooth boundary.

B22g—12 to 25 inches, gray (5Y 5/1) gravelly sandy loam; many fine and medium distinct light olive brown (2.5Y 5/6) and olive (5Y 5/3) mottles and common fine prominent dark yellowish brown (10YR 4/4) and dark brown (7.5YR 4/4) mottles; massive; friable; 15 percent gravel, 10 percent cobblestones, 5 percent stones; very strongly acid; clear smooth boundary.

B23—25 to 30 inches, olive (5Y 5/3) gravelly sandy loam; common fine prominent dark brown (7.5YR 4/4) mottles and many medium distinct light olive brown (2.5Y 5/4) and olive gray (5Y 5/2) mottles; massive; friable; 15 percent gravel, 10 percent cobblestones, 5 percent stones; strongly acid; clear smooth boundary.

C1g—30 to 41 inches, gray (5Y 5/1) gravelly sandy loam; many coarse prominent dark red (2.5YR 3/6), red (2.5YR 5/6), and yellowish red (5YR 5/8) mottles; massive; friable; 12 percent gravel, 5

percent cobblestones, 2 percent stones; strongly acid; abrupt smooth boundary.

C2—41 to 60 inches, olive (5Y 5/3) gravelly sandy loam; few fine faint light olive brown (2.5Y 5/6) and pale olive (5Y 6/3) mottles; massive; friable; 12 percent gravel, 5 percent cobblestones, 2 percent stones; strongly acid.

The thickness of the solum ranges from 20 to 36 inches. Rock fragments make up 5 to 30 percent of the solum and 10 to 35 percent of the C horizon. Unless limed, the soil is very strongly or strongly acid throughout.

The A1 or Ap horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The A horizon is loam or fine sandy loam or their gravelly analogs.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 or 2 in the upper part. Chroma in the lower part is 1 to 4. The B horizon is loam, fine sandy loam, or sandy loam or their gravelly analogs.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is sandy loam or fine sandy loam or their gravelly analogs.

Marlow series

The Marlow series consists of deep, well drained soils on drumlins and on the smooth sides of hills. Marlow soils formed in compact glacial till. Slopes range from 3 to 50 percent.

Marlow soils are on the landscape with well drained Monadnock soils; somewhat excessively drained, shallow Lyman soils; moderately well drained Peru soils, and poorly drained to somewhat poorly drained Pillsbury soils. Marlow soils have a dense substratum, and Monadnock soils do not. The Marlow soils and Bernardston soils are on similar kinds of landforms, but the Marlow soils contain less silt than the Bernardston soils.

Typical pedon of Marlow loam in an area of Marlow stony loam, 8 to 15 percent slopes, town of Washington, 1.8 miles southeast on NH Route 31 from the village of Washington, 1.6 miles south of NH Route 31 along a gravel road, 50 feet north of the gravel road:

O1—1 inch to 0, fresh and partially decomposed leaves, needles, and twigs.

A1—0 to 4 inches, very dark grayish brown (10YR 3/2) loam; weak fine and medium granular structure; very friable; many fine and common medium roots; 15 percent rock fragments, mostly gravel and cobblestones, some stones; strongly acid; abrupt smooth boundary.

B21ir—4 to 8 inches, strong brown (7.5YR 5/6) loam; weak fine and medium granular structure; friable; common fine and medium roots; 15 percent rock

fragments, mostly gravel and cobblestones, some stones; strongly acid; clear wavy boundary.

B22ir—8 to 12 inches, dark brown (7.5Y 4/4) and yellowish brown (10YR 5/6) fine sandy loam; weak medium granular structure; friable; common fine and few medium roots; 15 percent rock fragments, mostly gravel and cobblestones, few stones; strongly acid; clear wavy boundary.

B23—12 to 17 inches, yellowish brown (10YR 5/4) fine sandy loam; weak medium granular structure; friable; common fine and few medium roots; 15 percent rock fragments, mostly gravel and cobblestones, some stones; strongly acid; gradual wavy boundary.

B3—17 to 24 inches, light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; 15 percent rock fragments, mostly gravel and cobblestones, some stones; strongly acid; clear smooth boundary.

Cx—24 to 60 inches, olive (5Y 5/3) fine sandy loam; weak thick platy structure; very firm; few widely spaced vertical fracture faces that extend almost vertically into the horizon and have gray (5Y 5/1) interiors and strong brown (7.5YR 5/6) exteriors; 15 percent rock fragments of gravel and cobblestones; strongly acid.

The solum thickness and depth to the fragipan range from 15 to 36 inches. Rock fragments make up 10 to 30 percent of the soil. Unless limed, the soil is very strongly acid to medium acid throughout.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 to 3. Some pedons have an Ap horizon with hue of 10YR and value and chroma of 3 or 4. In some pedons there is a thin, discontinuous A2 horizon. The A horizon is loam or fine sandy loam or their gravelly analogs.

The upper part of the B horizon has hue of 5YR to 10YR, value of 4 or 5, and chroma of 3 to 8. The lower part of the B horizon has hue of 10YR or 2.5Y, value of 4 to 5, and chroma of 3 to 6. The B horizon is loam or fine sandy loam or their gravelly analogs.

The Cx horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4. It is loam or fine sandy loam or their gravelly analogs. Consistence is firm or very firm.

Monadnock series

The Monadnock series consists of deep, well drained soils on hills and mountains. Monadnock soils formed in stony glacial till. Slopes range from 3 to 50 percent.

Monadnock soils are on the landscape with well drained to somewhat excessively drained Hermon soils, somewhat excessively drained Lyman soils, well drained Marlow soils, moderately well drained Sunapee soils, and poorly drained to somewhat poorly drained Lyme and

Moosilauke soils. Monadnock soils contain fewer rock fragments than the Hermon soils and are not as sandy in the subsoil. Monadnock soils do not have the dense basal till typical of the Marlow soils and are deeper to bedrock than the Lyman soils.

Typical pedon of Monadnock fine sandy loam in an area of Monadnock stony fine sandy loam, 8 to 15 percent slopes, town of Grantham, North Grantham area, 750 feet west of NH route 10 and 1,660 feet north of the village of North Grantham:

O1—2 inches to 1 inch, fresh and partially decomposed leaves and twigs.

O2—1 inch to 0, black (10YR 2/1) decomposed leaves and twigs.

A2—0 to 2 inches, gray (10YR 6/1) fine sandy loam; weak medium granular structure; very friable; many fine and medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobblestones and a few stones; very strongly acid; clear smooth boundary.

B21hir—2 to 3 inches, dusky red (2.5YR 3/2) fine sandy loam; weak medium granular structure; friable; common fine and medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobblestones and a few stones; very strongly acid; abrupt smooth boundary.

B22ir—3 to 5 inches, yellowish red (5YR 4/6) fine sandy loam; weak medium granular structure; very friable; common fine and medium and few coarse roots; 15 percent rock fragments, mostly gravel and cobblestones and few stones; very strongly acid; clear wavy boundary.

B23ir—5 to 13 inches, yellowish brown (10YR 5/8) fine sandy loam; weak fine granular structure; very friable; common fine and medium roots; 15 percent rock fragments, mostly gravel and cobblestones and few stones; very strongly acid; clear wavy boundary.

B24—13 to 24 inches; light olive brown (2.5Y 5/6) fine sandy loam; weak medium granular structure; friable; few fine and medium roots; 15 percent rock fragments, mostly cobblestones and stones and some gravel; very strongly acid; gradual wavy boundary.

B3—24 to 31 inches, olive (5Y 4/3) fine sandy loam; weak medium and coarse granular structure; friable; few fine roots; 15 percent rock fragments, mostly cobblestones and stones and some gravel; very strongly acid; clear wavy boundary.

C1—31 to 36 inches, olive (5Y 4/3) gravelly fine sandy loam; massive; friable; 30 percent rock fragments, mostly gravel and cobblestones; very strongly acid; clear wavy boundary.

IIC2—36 to 60 inches; olive (5Y 5/3) gravelly loamy sand; massive; very friable; 40 percent rock fragments, mostly gravel and cobblestones and some stones; very strongly acid.

The solum thickness ranges from 18 to 36 inches. The depth to contrasting material is 30 to 36 inches. Rock fragments make up 5 to 50 percent of the A horizon, 5 to 30 percent of the B horizon, and 10 to 45 percent of the C horizon. Unless limed, the soil ranges from extremely acid to medium acid throughout.

The A2 horizon has hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 0 to 2. Some pedons do not have an A2 horizon, or it is discontinuous. Some pedons have an A1 horizon that has hue of 10YR, value of 2 or 3, and chroma of 1 to 3. Some pedons have an Ap horizon that has hue of 10YR and value and chroma of 3 or 4. The A horizon is loam or fine sandy loam or their gravelly analogs.

The B21hr horizon has hue of 2.5YR to 7.5YR, value of 2 to 5, and chroma of 2 to 4. Some pedons do not have a B22hr horizon, or it is discontinuous. The B22ir horizon has hue of 5YR or 7.5YR, value of 3 to 5, and chroma of 3 to 6. The B23ir and B24 horizons have hue of 7.5YR to 2.5Y, value of 4 to 6, and chroma of 4 to 8. The B horizon is fine sandy loam, loam, or sandy loam or their gravelly analogs.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. The C1 horizon is fine sandy loam or sandy loam or their gravelly analogs. The IIC2 horizon is loamy sand or loamy fine sand or their gravelly analogs.

Moosilauke series

The Moosilauke series consists of deep, poorly drained to somewhat poorly drained soils that have a water table at or near the surface for 6 to 8 months of the year. Moosilauke soils formed in loamy over sandy and gravelly glacial outwash. They are in low depressions and shallow drainageways. Slopes range from 0 to 8 percent.

Moosilauke soils are near well drained to somewhat excessively drained Hermon soils, well drained Monadnock soils, moderately well drained Sunapee soils, and poorly drained to somewhat poorly drained Pillsbury soils. Moosilauke soils do not have the dense substratum, which is characteristic of the Pillsbury soils. Moosilauke soils are on the landscape with poorly drained Lyme soils but contain more sand in the substratum.

Moosilauke soils in Sullivan County are mapped only with Lyme soils.

Typical pedon of Moosilauke loam in an area of Lyme-Moosilauke stony loams, 0 to 3 percent slopes, 1 mile south of the village of Lempster on Lovejoy Road, 50 feet west of Lovejoy Road:

A1—0 to 8 inches, very dark grayish brown (10YR 3/2) loam; weak fine granular structure; very friable; many fine and common medium roots; 2 percent

gravel and 5 percent cobblestones; very strongly acid; abrupt smooth boundary.

B21g—8 to 13 inches, gray (5Y 5/1) sandy loam; common fine and medium prominent brown (7.5YR 5/2), dark brown (7.5YR 4/4), and strong brown (7.5YR 5/6, 5/8) mottles; weak medium granular structure; friable; few fine roots; 3 percent gravel and 7 percent cobblestones; very strongly acid; clear smooth boundary.

B22g—13 to 20 inches, olive gray (5Y 5/2) sandy loam; common fine and medium distinct strong brown (7.5YR 5/6) and yellowish brown (10YR 5/4) mottles and few medium distinct gray (5Y 6/1) mottles; weak medium granular structure; very friable; 3 percent gravel and 7 percent cobblestones; very strongly acid; gradual smooth boundary.

IIC1—20 to 37 inches, olive (5Y 5/3) gravelly sand; common fine and medium distinct gray (5Y 5/1) and yellowish brown (10YR 5/4) mottles; single grain; loose; 25 percent gravel and 10 percent cobblestones; strongly acid; clear smooth boundary.

IIC2—37 to 44 inches, yellowish brown (10YR 5/4) gravelly sand; single grain; loose; 30 percent gravel and 15 percent cobblestones; strongly acid; clear smooth boundary.

IIC3—44 to 60 inches pale olive (5Y 6/3) gravelly sand; common medium prominent yellowish red (5YR 5/8) mottles; single grain; loose; 30 percent gravel and 15 percent cobblestones; strongly acid.

The thickness of the solum and the depth to stratified sand and gravel range from 18 to 28 inches. Coarse fragments make up 5 to 25 percent of the A and B horizons and 5 to 50 percent of individual layers in the IIC horizon. Unless limed, the soil ranges from very strongly acid to medium acid throughout.

The A horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. It is fine sandy loam or loam.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3. It is sandy loam or loamy sand or their gravelly analogs.

The IIC horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. The individual layers are loamy sand or sand or their gravelly analogs.

Naumburg series

The Naumburg series consists of deep, poorly drained to somewhat poorly drained soils that have a water table between the surface and a depth of 1-1/2 feet during wet periods. The soils formed in stratified glacial outwash materials in low-lying areas of sand plains and terraces. Slopes range from 0 to 3 percent.

Naumburg soils are on the landscape with excessively drained Adams and Colton soils and moderately well

drained Croghan soils, and formed in the same kinds of materials.

Typical pedon of Naumburg loamy sand, town of Charlestown, 1.4 miles east of the Connecticut River and 0.9 mile south of NH Route 11-12:

- Ap—0 to 7 inches, very dark grayish brown (10YR 3/2) loamy sand; weak fine granular structure; very friable; common fine roots; strongly acid; abrupt smooth boundary.
- A2—7 to 10 inches, gray (10YR 6/1) sand; massive; very friable; common fine roots; strongly acid; abrupt wavy boundary.
- B21h—10 to 14 inches, dark reddish brown (5YR 2/2) sand; common medium yellowish red (5YR 4/6, 5/6) and black (10YR 2/1) mottles; massive; friable; 15 percent small pieces of black (5YR 2/1) cemented ortstein; few fine roots; strongly acid; clear wavy boundary.
- B22ir—14 to 22 inches, strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) sand; many medium and coarse prominent very dusky red (2.5YR 2/2), red (2.5YR 5/6), and yellowish red (5YR 4/6) mottles and few fine prominent light brownish gray (2.5Y 6/2) mottles; single grain; very friable; few fine roots; strongly acid; clear smooth boundary.
- B3—22 to 33 inches, yellowish brown (10YR 5/4) and olive brown (2.5Y 4/4) sand; common medium and coarse prominent reddish brown (5YR 4/4), strong brown (7.5YR 5/6), and light brownish gray (2.5Y 6/2) mottles; single grain; loose; strongly acid; clear smooth boundary.
- C1—33 to 57 inches, olive (5Y 5/3) sand; common medium and coarse distinct strong brown (7.5YR 5/6, 5/8) and yellowish brown (10YR 5/6, 5/8) mottles; single grain; loose; very strongly acid; clear smooth boundary.
- C2—57 to 65 inches, pale olive (5Y 6/3) sand; few fine and medium distinct strong brown (7.5YR 5/6, 5/8) and yellowish brown (10YR 5/6, 5/8) mottles; single grain; loose; very strongly acid.

The thickness of the solum ranges from 20 to 36 inches. Unless the soil is limed, the solum ranges from extremely acid to strongly acid and the C horizon from very strongly acid to medium acid.

The Ap horizon has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. In undisturbed pedons a black O2 horizon overlies an A2 horizon. The A2 horizon has hue of 7.5YR or 10YR, value of 5 to 7, and chroma of 1 or 2. The A horizon is loamy sand or sand.

The B21h horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. The B22ir horizon has hue of 5YR to 10YR and value and chroma of 3 to 6. The B3 horizon has hue of 10YR or 2.5Y, value of 4 to 6, and chroma of 3 to 6. The B horizon is sand, loamy sand, or loamy fine sand.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4. It is sand, loamy sand, or loamy fine sand.

Ninigret series

The Ninigret series consists of deep, moderately well drained soils. Ninigret soils formed in loamy over sandy glacial outwash material on outwash plains and terraces in major stream valleys. Slopes range from 0 to 5 percent.

Ninigret soils are on the landscape with well drained Agawam soils and formed in the same kinds of materials. Ninigret soils and moderately well drained Scio soils are on similar landforms, but the Ninigret soils contain more sand than the Scio soils.

Typical pedon of Ninigret fine sandy loam, 0 to 5° percent slopes, town of Charlestown, 1 mile south of the Claremont-Charlestown town line on NH Route 12A, 150 feet west of NH Route 12A:

- Ap—0 to 9 inches, dark brown (10YR 3/3) fine sandy loam; weak fine and medium granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.
- B21—9 to 16 inches, yellowish brown (10YR 5/6) fine sandy loam; weak fine and medium granular structure; very friable; common fine roots; strongly acid; clear wavy boundary.
- B22—16 to 26 inches; light olive brown (2.5Y 5/6) fine sandy loam; common fine and medium distinct olive gray (5Y 5/2), yellowish brown (10YR 5/8), and strong brown (7.5YR 5/6) mottles; massive; very friable; few fine roots; strongly acid; gradual wavy boundary.
- IIC—26 to 60 inches, olive (5Y 5/3) loamy fine sand; common fine and medium distinct olive gray (5Y 5/2), yellowish brown (10YR 5/6), and strong brown (7.5YR 5/6) mottles; few 1 to 1-1/2 inch thick lenses of gray (5Y 5/1) silt; massive; very friable; few fine roots that decrease in content with depth; strongly acid.

The thickness of the solum ranges from 18 to 30 inches. Coarse fragments make up 0 to 10 percent of the A and B horizons and 0 to 30 percent of the C horizon. In unlimed areas the soil ranges from very strongly acid to medium acid throughout.

The A horizon has hue of 10YR, value of 2 to 4, and chroma of 1 to 4. It is fine sandy loam or very fine sandy loam.

The upper part of the B horizon has hue of 7.5YR or 10YR and value and chroma of 4 to 6. The lower part of the B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6 and is mottled. The B horizon is fine sandy loam or very fine sandy loam.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 6 and is mottled. It ranges from loamy fine sand to gravelly sand.

Ondawa series

The Ondawa series consists of deep, well drained soils that are subject to flooding. Ondawa soils formed in stratified alluvial deposits on flood plains in stream valleys. Slopes range from 0 to 3 percent.

Ondawa soils are on the landscape with excessively drained Sunday soils, moderately well drained Podunk soils, and poorly drained Rumney soils. Ondawa and Hadley soils are on similar landscape positions, but the Ondawa soils contain more sand than the Hadley soils.

Typical pedon of Ondawa fine sandy loam, in a cultivated field, city of Claremont, 1,500 feet south of the Sugar River and 1.7 miles west of the Newport-Claremont Town line:

- Ap—0 to 10 inches, very dark grayish brown (10YR 3/2) fine sandy loam; weak medium granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.
- B21—10 to 20 inches, light olive brown (2.5Y 5/6) fine sandy loam; weak fine granular structure; friable; few fine roots; neutral; gradual wavy boundary.
- B22—20 to 36 inches, olive brown (2.5Y 4/4) fine sandy loam; weak fine granular structure; friable; few fine roots that decrease with depth; neutral; abrupt smooth boundary.
- IIc—36 to 48 inches, light olive brown (2.5Y 5/4) and light yellowish brown (2.5Y 6/4) loamy fine sand; single grain; loose; slightly acid; abrupt smooth boundary.
- IIIC—48 to 60 inches, light olive brown (2.5Y 5/4) and light yellowish brown (2.5Y 6/4) sand; single grain; loose; streaks of strong brown (7.5YR 5/6) and yellowish brown (10YR 5/8) sand; slightly acid.

The thickness of the solum and the depth to layers of contrasting material range from 20 to 40 inches. In unlimed areas the soil is very strongly acid to slightly acid throughout.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Some pedons have an A1 horizon with hue of 10YR, value of 2 or 3, and chroma of 1 to 3. The A horizon is fine sandy loam, sandy loam, or loam.

The B horizon has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 3 to 8. It is loam, fine sandy loam, or sandy loam.

The C horizon has hue of 10YR through 5Y, value of 4 to 7, and chroma of 2 to 6. The individual layers range from loamy fine sand to sand. In places there are thin

strata or lenses of gravel, gravelly sand, or gravelly loamy sand.

Ossipee series

The Ossipee series consists of deep, very poorly drained soils that formed in organic materials 16 to 50 inches thick over a loamy mineral substratum. The Ossipee soils are in broad, low-lying boggy depressions and drainageways on outwash plains, lake plains, and glacial till uplands. Slopes range from 0 to 2 percent.

Ossipee soils are near poorly drained to somewhat poorly drained Moosilauke and Pillsbury soils and poorly drained Lyme soils. Ossipee soils formed in organic material; Moosilauke, Pillsbury, and Lyme soils formed in mineral material. Ossipee soils and very poorly drained, organic Greenwood and Chocorua soils are on similar landforms. The Ossipee soils have a mineral substratum at a depth of 16 to 50 inches, and the Greenwood soils do not. The Ossipee soils have less sand in the substratum than the Chocorua soils.

Typical pedon of Ossipee mucky peat in a sparsely wooded bog, town of Lempster, 0.5 mile north of the junction of Lovejoy Road and NH Route 10, 50 feet east of Lovejoy Road.

- Oe1—0 to 10 inches, very dark gray (5YR 3/1) broken face and rubbed mucky peat (hemic material); 60 percent fiber, 30 percent rubbed; weak medium granular structure; slightly sticky; few fine roots; 5 percent woody coarse fragments; strongly acid; abrupt smooth boundary.
- Oe2—10 to 20 inches, dark reddish brown (5YR 3/2) broken face and rubbed mucky peat (hemic material); 50 percent fiber, 30 percent rubbed; weak medium granular structure; slightly sticky; few fine roots; 5 percent woody coarse fragments; strongly acid; abrupt smooth boundary.
- Oe3—20 to 28 inches, dark reddish brown (5YR 2/2) broken face, dark reddish brown (5YR 3/2) rubbed mucky peat (hemic material); 50 percent fiber, 25 percent rubbed; massive; slightly sticky; few fine roots; 5 percent woody coarse fragments; strongly acid; abrupt smooth boundary.
- IIc1g—28 to 42 inches, grayish brown (2.5Y 5/2) silt loam; common medium distinct gray (5Y 5/1) mottles; brown (10YR 4/3) and dark yellowish brown (10YR 4/4) organic stains; massive; slightly sticky; medium acid; abrupt smooth boundary.
- IIc2g—42 to 60 inches, gray (5Y 5/1) sandy loam; massive; slightly sticky; medium acid.

The thickness of the organic layers ranges from 16 to 50 inches. The organic material mainly is partly decomposed herbaceous and woody materials. Slightly decomposed woody coarse fragments make up 2 to 15 percent of the organic volume. The Oe layers have

broken face hue of 5YR, value of 1 to 3, and chroma of 1 or 2; hue of 2.5YR, value of 2 to 4 and chroma of 2 or 4; and hue of 7.5YR, value of 3, and chroma of 2. Reaction ranges from extremely acid to strongly acid in the organic material and from strongly acid to slightly acid in the underlying material.

The surface tier is mainly hemic material. In some pedons there is a surface layer 2 to 6 inches thick of fibric material derived mostly from sphagnum moss. The fiber content of the hemic material ranges from 40 to 75 percent of the organic volume unrubbed and from 20 to 50 percent rubbed.

The subsurface tier is mainly hemic material. The fiber content ranges from 50 to 80 percent of the organic volume unrubbed and from 20 to 40 percent rubbed.

The C horizon has hue of 5Y, value of 4 to 6, and chroma of 1 or 2 and hue of 2.5Y, value of 5 or 6, and chroma of 2. It ranges from sandy loam to silt loam.

Peru series

The Peru series consists of deep, moderately well drained soils on drumlins and on the lower smooth sides of hills. Peru soils formed in compact glacial till. Slopes range from 0 to 25 percent.

Peru soils are on the landscape with well drained Marlow and Monadnock soils, moderately well drained Sunapee soils, and poorly drained to somewhat poorly drained Pillsbury soils. Peru soils have a dense substratum, and the Sunapee soils do not. The Peru and Pittstown soils are on similar kinds of landforms, but the Peru soils contain less silt than the Pittstown soils.

Typical pedon of Peru loam in an area of Peru stony loam, 8 to 15 percent slopes, town of Sunapee, 0.6 mile south of the junction of NH Route 11 and Trow Hill Road on NH Route 11, 1,200 feet west of NH Route 11:

- O1—2 inches to 1 inch, fresh and partially decomposed leaves, needles, and twigs.
- O2—1 inch to 0, decomposed leaves, needles, and twigs.
- A1—0 to 1 inch, very dark brown (10YR 2/2) loam; weak fine granular structure; very friable; many fine and common medium roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; abrupt smooth boundary.
- A2—1 inch to 2 inches, light brownish gray (10YR 6/2) loam; weak medium granular structure; very friable; many fine and common medium roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; abrupt broken boundary.
- B21r—2 to 3 inches, yellowish red (5YR 4/6) loam; weak medium granular structure; friable; many fine and common medium roots; 15 percent rock fragments of gravel, cobblestones, and stones; strongly acid; abrupt smooth boundary.

B22ir—3 to 6 inches, dark brown (7.5YR 4/4) loam; weak medium granular structure; friable; many and common medium roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; clear wavy boundary.

B23ir—6 to 12 inches; dark yellowish brown (10YR 4/4) loam; weak medium granular structure; friable; common fine and medium roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; clear wavy boundary.

B24—12 to 21 inches, olive brown (2.5Y 4/4) loam; common fine and medium distinct light olive gray (5Y 6/2), dark brown (7.5YR 4/4), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/6) mottles in lower part; weak medium subangular blocky structure; friable; common fine and medium roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; abrupt smooth boundary.

Cx—21 to 60 inches; olive (5Y 5/3) fine sandy loam; few fine and medium distinct dark brown (7.5YR 4/4), strong brown (7.5YR 5/6), and yellowish brown (10YR 5/6) mottles; weak thick platy structure; very firm; few widely spaced fracture faces with gray (5Y 5/1) interiors and strong brown (7.5YR 5/6) rinds that extend almost vertically into horizon; 15 percent rock fragments of mostly gravel and cobblestones; very strongly acid.

The solum thickness and the depth to the compact till substratum range from 15 to 36 inches. Rock fragments make up 5 to 30 percent of the soil. Unless limed, the soil is very strongly acid to medium acid throughout.

The A1 horizon has hue of 10YR, value of 2 or 3, and chroma of 1 to 3. Some pedons have an Ap horizon with hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The A2 horizon has hue of 7.5YR to 2.5Y, value of 5 or 6, and chroma of 1 or 2. Some pedons do not have an A2 horizon. The A horizon is loam or fine sandy loam or their gravelly analogs.

The upper part of the B horizon has hue of 5YR to 10YR, value of 4 to 5, and chroma of 4 to 8. The lower part of the B horizon has hue of 10YR or 2.5Y, value of 4 to 5, and chroma of 4 to 6. The B horizon is loam or fine sandy loam or their gravelly analogs.

The Cx horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 to 4. It is loam or fine sandy loam or their gravelly analogs. Consistence is firm or very firm.

Pillsbury series

The Pillsbury series consists of deep, poorly drained and somewhat poorly drained soils that have a water table at or near the surface 7 to 9 months of the year. Pillsbury soils formed in compact glacial till. They are in depressions and shallow drainageways and on concave

toe slopes on uplands. Slopes range from 0 to 8 percent.

Pillsbury soils are on the landscape with well drained Marlow soils, moderately well drained Peru soils, poorly drained Lyme soils, and poorly drained to somewhat poorly drained Moosilauke soils. Pillsbury soils have a substratum of compact glacial till; the Lyme and Moosilauke soils have a friable or very friable substratum. The Pillsbury soils and Stissing soils are on similar kinds of landforms, but the Pillsbury soils contain less silt than the Stissing soils.

Typical pedon of Pillsbury loam in an area of Pillsbury stony loam, 0 to 3 percent slopes, town of Lempster, 2,000 feet north of the junction of the Unity-Lempster and Newport-Unity Roads:

- O1—1 inch to 0, fresh and partially decomposed leaves, needles, and twigs.
- A1—0 to 5 inches, black (10YR 2/1) loam; weak fine and medium granular structure; friable; many fine and common medium roots; 20 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; clear smooth boundary.
- B21g—5 to 12 inches, dark grayish brown (10YR 4/2) fine sandy loam; few fine distinct dark yellowish brown (10YR 4/4), olive gray (5Y 5/2), and gray (5Y 5/1) mottles; weak medium granular structure; friable; few fine roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; clear smooth boundary.
- B22g—12 to 22 inches; dark grayish brown (2.5Y 4/2) fine sandy loam; common medium distinct dark yellowish brown (10YR 4/4), light olive brown (2.5Y 5/4), and olive (5Y 5/6) mottles; weak medium subangular blocky structure; friable; very few fine roots; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; clear smooth boundary.
- Cx—22 to 60 inches, olive brown (2.5Y 4/4) fine sandy loam; common medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) mottles; massive; firm; few widely spaced fracture faces with gray (5Y 5/1) interiors and yellowish brown (10YR 5/6) rinds that extend almost vertically into horizon; 15 percent rock fragments of gravel, cobblestones, and stones; very strongly acid.

The solum thickness and the depth to the compact till substratum range from 10 to 35 inches. Rock fragments make up 15 to 35 percent of the solum and C horizon. Unless limed, the soil ranges from very strongly acid to medium acid throughout.

The A horizon has hue of 10YR to 5Y, value of 2 or 3, and chroma of 1 or 2. The A horizon is loam or fine sandy loam or their gravelly analogs.

The B horizon is neutral and has value of 4 to 6 or has

hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3. It is distinctly or prominently mottled and is loam or fine sandy loam or their gravelly analogs.

The Cx horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 4. It is distinctly or prominently mottled and is fine sandy loam, sandy loam, or their gravelly analogs. Consistence is firm or very firm.

Pittstown series

The Pittstown series consists of deep, moderately well drained soils on drumlins and on the lower smooth sides of hills. Pittstown soils formed in compact glacial till derived mainly from dark gray phyllite and schist. Slopes range from 0 to 25 percent.

Pittstown soils are on the landscape with well drained Bernardston soils and poorly drained Stissing soils. The Pittstown soils and Peru soils are on similar kinds of landforms, but the Pittstown soils contain more silt than the Peru soils.

Typical pedon of Pittstown silt loam, 3 to 8 percent slopes, 2,500 feet east of the Chartlestown-Unity town line and 2,500 feet south of the Claremont-Unity town line:

- Ap—0 to 9 inches, very dark grayish brown (10YR 3/2) silt loam; moderate fine and medium granular structure; very friable; many fine and medium roots; 15 percent rock fragments, mostly gravel and cobblestones, few stones; very strongly acid; clear smooth boundary.
- B21—9 to 17 inches, light olive brown (2.5Y 5/4) silt loam; few fine faint brown (10YR 4/3) mottles in lower part; weak fine and medium granular structure; friable; common fine and few medium roots; 15 percent rock fragments, mostly gravel and cobblestones, few stones; strongly acid; clear smooth boundary.
- B22—17 to 22 inches, light olive brown (2.5Y 5/4) silt loam; few fine distinct grayish brown (2.5Y 5/2) mottles and many fine and medium distinct yellowish brown (10YR 5/6) and brown (7.5YR 4/4) mottles; weak medium subangular blocky structure; friable; common fine and few medium roots; 15 percent rock fragments, mostly gravel and cobblestones, few stones; strongly acid; clear smooth boundary.
- C1x—22 to 55 inches, olive gray (5Y 5/2) gravelly loam; many coarse prominent yellowish brown (10YR 5/6, 5/8), strong brown (7.5YR 5/6), and dark reddish brown (5YR 3/4) mottles; massive; very firm; few widely spaced fracture faces with olive gray (5Y 5/2) interiors and reddish brown (5Y 4/4) rinds that extend almost vertically into horizon; 25 percent rock fragments of gravel and cobblestones; strongly acid; clear smooth boundary.
- C2x—55 to 60 inches, olive (5Y 4/3) gravelly loam; few

fine and medium prominent dark yellowish brown (10YR 4/4), brown (7.5YR 4/4), and dark reddish brown (5YR 3/4) mottles; massive; very firm; 25 percent rock fragments of gravel and cobbles; strongly acid.

The solum thickness and the depth to compact till substratum range from 15 to 30 inches. The depth to distinct or prominent mottling ranges from 15 to 25 inches. Rock fragments make up 5 to 30 percent of the solum and C horizon. Unless limed, the soil is very strongly acid to medium acid throughout.

The Ap horizon has hue of 10YR, value of 2 to 4, and chroma of 2 or 3. Some pedons have an A1 horizon that has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The A horizon is loam, silt loam, or very fine sandy loam.

The upper part of the B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 3 or 4; the lower part has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 3 or 4. The B horizon is silt loam, loam, very fine sandy loam, or their channery and gravelly analogs.

The Cx horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 2 or 3. It is silt loam, loam, very fine sandy loam, and their channery and gravelly analogs. Consistence is firm or very firm.

Podunk series

The Podunk series consists of deep, moderately well drained soils that are subject to frequent flooding. Podunk soils formed in stratified alluvial deposits on flood plains in stream valleys. Slopes range from 0 to 3 percent.

Podunk soils are on the landscape with well drained Ondawa soils, poorly drained Rumney soils, and very poorly drained Saco Variant soils. Podunk soils and moderately well drained Winooski soils are on similar landscape positions, but the Podunk soils contain more sand than the Winooski soils.

Typical pedon of a Podunk fine sandy loam in a cultivated field, City of Claremont, 2,000 feet south of the Sugar River and 1.7 miles west of the Newport-Claremont town line:

- Ap—0 to 10 inches, brown (10YR 4/3) fine sandy loam; weak medium granular structure; very friable; few fine roots; neutral; abrupt smooth boundary.
- B21—10 to 18 inches, olive brown (2.5Y 4/4) fine sandy loam; weak medium granular structure; very friable; few fine roots; slightly acid; gradual wavy boundary.
- B22—18 to 24 inches, olive brown (2.5Y 4/4) fine sandy loam; few fine faint yellowish brown (10YR 5/6) and olive (5Y 4/3) mottles and few fine distinct olive gray (5Y 5/2) mottles; weak fine granular structure; very friable; few fine roots; medium acid; gradual wavy boundary.
- B23—24 to 29 inches, light olive brown (2.5Y 5/6) and

olive brown (2.5Y 4/4) fine sandy loam; common fine distinct yellowish brown (10YR 5/6) olive (5Y 5/3), and olive gray (5Y 4/2) mottles; weak fine granular structure; very friable; very few fine roots; medium acid; clear smooth boundary.

IIIC1—29 to 46 inches, olive gray (5Y 5/2) and olive (5Y 5/3) loamy sand; common yellowish brown (10YR 5/6) and dark yellowish brown (10YR 4/4) mottles; single grained; very friable; medium acid; abrupt smooth boundary.

IIIC2—46 to 60 inches, light olive brown (2.5Y 5/4) and olive (5Y 5/4) sand; common distinct yellowish brown (10YR 5/4) mottles; single grained; loose; medium acid.

The thickness of the solum and the depth to layers of contrasting material range from 20 to 40 inches. Except where limed, the soil is very strongly acid to slightly acid throughout.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 to 5, and chroma of 2 to 4. Some pedons have an A1 horizon with hue of 10YR, value of 2 or 3, and chroma of 1 to 3. The A horizon is fine sandy loam or loam.

The B horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 3 to 6. It is fine sandy loam, sandy loam, or loam.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 6. The texture of the individual layers ranges from loamy fine sand to sand. In some pedons there are strata or lenses of gravel, gravelly sand, or gravelly loamy sand.

Quonset series

The Quonset series consists of deep, excessively drained soils. Quonset soils formed in sandy and gravelly glacial outwash material on outwash plains, terraces, kames, and eskers. Slopes range from 3 to 35 percent.

Quonset soils are on the landscape with excessively drained Windsor soils, somewhat excessively drained Warwick soils, and well drained Haven soils. The Quonset soils contain more gravel than the Windsor soils, contain more sand in the subsoil than the Warwick soils, and contain more sand and more coarse fragments in the surface layer and subsoil than the Haven soils.

Typical pedon of Quonset gravelly fine sandy loam, in an area of Warwick-Quonset gravelly fine sandy loams, 3 to 8 percent slopes, town of Cornish, 1.2 miles west of the junction of Jackson Road and NH Route 120, 75 feet north of Jackson Road:

- Ap—0 to 6 inches, dark brown (10YR 4/3) gravelly fine sandy loam; weak fine granular structure; very friable; common fine roots; 25 percent subrounded gravel, 5 percent subrounded cobbles; very strongly acid; clear smooth boundary.
- B21—6 to 9 inches, dark yellowish brown (10YR 4/4)

gravelly sandy loam; weak fine and medium granular structure; very friable; common fine roots; 25 percent subrounded gravel, 15 percent subrounded cobbles; very strongly acid; clear wavy boundary.

B22—9 to 16 inches, yellowish brown (10YR 5/4) gravelly loamy sand; single grain; loose common fine roots; 35 percent subrounded gravel, 15 percent subrounded cobbles; strongly acid; gradual wavy boundary.

C1—16 to 45 inches, light olive brown (2.5Y 5/4) very gravelly sand; single grain; loose; few fine roots in upper part; 40 percent subrounded gravel, 20 percent subrounded cobbles; medium acid; clear wavy boundary.

C2—45 to 60 inches, olive gray (5Y 5/2) very gravelly coarse sand; single grain; loose; 50 percent subrounded gravel, 20 percent subrounded cobbles; medium acid.

The solum thickness ranges from 15 to 30 inches. Coarse fragments make up 30 to 50 percent of the solum and 40 to 90 percent of the substratum. Dark phyllite fragments make up one half or more of the coarse fragments and are subrounded or flat. Unless limed, the soil is very strongly acid to strongly acid in the solum and strongly acid to slightly acid in the substratum.

The Ap horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. Some pedons have an A1 horizon that has hue of 10YR, value of 2 or 3, and chroma of 1 or 2. The A horizon is gravelly fine sandy loam or gravelly sandy loam.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. The lower part has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 or 6. The B21 ranges from gravelly fine sandy loam to gravelly loamy sand.

The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 to 4. Individual strata are gravelly or very gravelly sand or gravelly or very gravelly coarse sand.

Raynham series

The Raynham series consists of deep, poorly drained soils that have a seasonal high water table between the surface and a depth of 1 foot. Raynham soils formed in loamy lacustrine materials in depressions in outwash plains and terraces. Slopes range from 0 to 3 percent.

Raynham soils are on the landscape with well drained Unadilla Variant soils and moderately well drained Scio soils and formed in the same kind of material. Raynham soils are similar to poorly drained Limerick soils but have more brown below the surface layer.

Typical pedon of Raynham silt loam, town of Langdon,

2,330 feet south of NH Route 12A and 1.3 miles west of the Cheshire County line:

Ap—0 to 9 inches, very dark grayish brown (2.5Y 3/2) silt loam; moderate medium granular structure; friable; common fine roots; slightly acid; abrupt smooth boundary.

B21—9 to 16 inches, olive (5Y 5/3) silt loam; common coarse distinct strong brown (7.5YR 5/6), dark brown (7.5YR 4/4), yellowish brown (10YR 5/6), and dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; few fine roots; slightly acid; clear smooth boundary.

B22g—16 to 24 inches, olive gray (5Y 5/2) silt loam; many coarse prominent strong brown (7.5YR 5/6), dark brown (7.5YR 4/4), yellowish brown (10YR 5/6), and dark yellowish brown (10YR 4/4) mottles; weak medium subangular blocky structure; friable; slightly acid; clear smooth boundary.

C1g—24 to 31 inches, gray (5Y 5/1) silt loam; many coarse prominent strong brown (7.5YR 5/6), dark brown (7.5YR 4/4, 4/2), yellowish brown (10YR 5/6), and gray (N 6/0) mottles; massive; firm; slightly acid; clear smooth boundary.

C2g—31 to 60 inches, gray (5Y 5/1) silt loam; common coarse prominent strong brown (7.5YR 5/6), dark brown (7.5YR 4/4, 4/2), yellowish brown (10YR 5/6), dark reddish gray (5YR 4/2), and gray (N 6/0) mottles; massive; firm; slightly acid.

The solum thickness ranges from 16 to 30 inches. The solum and the substratum are silt loam or very fine sandy loam. In some pedons the B and C horizons have thin strata of silt, loamy fine sand, and fine sand. The soil is strongly acid to neutral in the A and B horizons and medium acid to neutral in the C horizon.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 to 3.

The B horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 2 to 4.

The C horizon has hue of 10YR to 5Y, value of 4 to 6, and chroma of 1 to 3.

Rumney series

The Rumney series consists of deep, poorly drained soils that have a water table between the surface and a depth of 1 foot during wet periods. Rumney soils are subject to frequent flooding. They formed in stratified alluvial deposits on flood plains in major stream valleys. Slopes range from 0 to 2 percent.

Rumney soils are on the landscape with well drained Ondawa soils, moderately well drained Podunk soils, and very poorly drained Saco Variant soils. Rumney and Limerick soils are on similar landscape positions, but the Rumney soils contain more sand than the Limerick soils.

Typical pedon of Rumney loam, town of Acworth, East Acworth area, 1.5 miles north of the junction of NH Route 123A and East Acworth Road, 35 feet east, in field adjacent to the Cold River:

- Ap—0 to 7 inches, very dark grayish brown (2.5Y 3/2) loam; weak fine and medium granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.
- C1g—7 to 20 inches, dark grayish brown (2.5Y 4/2) fine sandy loam; common fine distinct gray (5Y 5/1) mottles and common fine prominent yellowish red (5YR 4/6) and dark red (2.5YR 3/6) mottles; massive; friable; few fine roots; strongly acid; clear wavy boundary.
- C2g—20 to 26 inches, olive gray (5Y 4/2) fine sandy loam; common fine faint gray (5Y 5/1) mottles and common fine prominent yellowish red (5YR 4/6) and dark red (2.5YR 3/6) mottles; massive; friable; very few fine roots; strongly acid; clear smooth boundary.
- C3g—26 to 38 inches, olive gray (5Y 4/2) loam; common fine faint gray (5Y 5/1) mottles and common fine prominent yellowish red (5YR 4/6) and dark red (2.5YR 3/6) mottles; massive; friable; strongly acid; abrupt smooth boundary.
- C4g—38 to 47 inches, very dark grayish brown (2.5Y 3/2) loamy sand; 5 percent rock fragments of gravel; single grain; loose; medium acid; abrupt smooth boundary.
- IIIC5g—47 to 60 inches, very dark grayish brown (2.5Y 3/2) gravelly loamy sand; 40 percent rock fragments of gravel; single grain; loose; medium acid.

The depth to sand or loamy sand ranges from 20 to 40 inches. The gravel content ranges from 0 to 10 percent in the A horizon and in the upper loamy layers of the C horizon. In the sandy lower layers of the C horizon, the gravel content ranges from 5 to 40 percent. Except where limed, the soil is very strongly acid to slightly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. It is loam or fine sandy loam.

The C horizon has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1 to 3. The chroma of 3 is restricted to the contrasting loamy sand or sand layers. Mottles range from common to many, fine to coarse, and faint to prominent and are more common in the loamy layers of the C horizon. The individual layers in the upper part of the C horizon are loam, fine sandy loam, or sandy loam. The individual layers in the lower part of the C horizon are loamy sand, sand, gravelly loamy sand, or gravelly sand.

The Rumney soils in this survey area are a taxadjunct to the Rumney series because they do not have a B horizon and the C horizon typically is massive. These differences do not affect use or management.

Saco series

The Saco series consists of deep, very poorly drained soils that have a water table at or near the surface most of the year. Saco soils are subject to very frequent flooding. They formed in stratified alluvial deposits on low-lying flood plains in major stream valleys. Slopes range from 0 to 1 percent.

Saco soils are on the landscape with poorly drained Limerick and Rumney soils and are on landscape positions similar to those of the Saco Variant soils. Saco soils do not have the contrasting textures above a depth of 40 inches that are typical of the Saco Variant soils.

Typical pedon of a Saco silt loam on a low flood plain of the Connecticut River, town of Charleston, 1,160 feet east of the Connecticut River and .95 mile south of the Charlestown-Claremont town line:

- A1—0 to 11 inches, very dark gray (10YR 3/1) silt loam; weak medium granular structure; friable; many fine roots; medium acid; clear smooth boundary.
- C1g—11 to 48 inches, dark gray (5Y 4/1) stratified silt loam and very fine sandy loam; few fine faint olive gray (5Y 6/2) mottles and few fine distinct dark brown (7.5YR 4/2) mottles; massive; friable; few fine roots that decrease in quantity with depth; medium acid; abrupt smooth boundary.
- C2g—48 to 60 inches, dark gray (5Y 4/1) loamy fine sand; massive; very friable; slightly acid.

Reaction ranges from medium acid to slightly acid.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3, and chroma of 1 or 2. It is silt loam or very fine sandy loam.

The C horizon is neutral and has value of 3 to 6 or has hue of 10YR to 5Y, value of 3 to 6, and chroma of 1.

The C1g horizon is silt loam or very fine sandy loam. In some pedons it has thin strata or lenses of material that is coarser than very fine sandy loam. The C2g horizon ranges from loamy fine sand to sand.

Saco Variant

The Saco Variant consists of deep, very poorly drained soils that have a water table at or near the surface most of the year. Saco Variant soils are subject to frequent flooding. They formed in stratified alluvial deposits on low-lying flood plains in major stream valleys. Slopes range from 0 to 1 percent.

Saco Variant soils are on the landscape with poorly drained Limerick and Rumney soils and are on landscape positions similar to those of the Saco soils. Saco Variant soils have contrasting textures above a depth of 40 inches, and Saco soils do not.

Typical pedon of a Saco Variant mucky silt loam on a low flood plain of the Sugar River, town of Sunapee, village of Wendell, 0.7 mile north on NH Route 11 from

the junction of NH Routes 11 and 103, 75 feet northeast of NH Route 11:

- O1—2 inches to 0, fresh and partially decomposed leaves, twigs, and ferns.
- A1—0 to 10 inches, very dark grayish brown (10YR 3/2) mucky silt loam; weak medium granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.
- C1g—10 to 18 inches, dark gray (5Y 4/1) silt loam, massive; friable; few fine roots to a depth of 14 inches; strongly acid; clear smooth boundary.
- C2g—18 to 28 inches, very dark gray (10YR 3/1) silt loam; few fine and medium distinct brown (10YR 4/3) mottles; massive; friable; strongly acid; abrupt smooth boundary.
- IIC3g—28 to 37 inches, olive gray (5Y 5/2) sand; common fine to coarse distinct brown (10YR 4/3) and dark yellowish brown (10YR 4/4) mottles and streaks; single grain; loose; medium acid; clear smooth boundary.
- IIC4g—37 to 48 inches, olive gray (5Y 5/2) gravelly loamy sand; many fine to coarse distinct brown (10YR 4/3) and dark yellowish brown (10YR 4/4) mottles and streaks; single grain; loose; slightly acid; abrupt smooth boundary.
- IIC5g—48 to 60 inches, gray (5Y 5/1) sand; single grain; loose; slightly acid.

The depth to layers of contrasting material ranges from 20 to 40 inches. The soil is strongly acid to slightly acid throughout.

The A horizon has hue of 10YR or 2.5Y, value of 2 or 3 and chroma of 1 to 3. The A horizon is mucky silt loam or silt loam.

The C horizon is neutral and has value of 3 to 6, or it has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1. It is silt loam or very fine sandy loam. The IIC horizon is neutral and has value of 3 to 6, or it has hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 or 2. It is sand or loamy sand or their gravelly analogs.

Scio series

The Scio series consists of deep, moderately well drained soils. Scio soils formed in lacustrine materials on terraces and outwash plains. Slopes range from 0 to 8 percent.

Scio soils are on the landscape with and formed in the same kind of materials as well drained Unadilla Variant soils and poorly drained Raynham soils. Scio soils and well drained Agawam soils and moderately well drained Ninigret soils are on similar landforms. The Scio soils contain more silt and very fine sand than the Agawam or Ninigret soils.

Typical pedon of a Scio silt loam, 0 to 3 percent slopes, Town of Charlestown, 1.1 miles south of the

Charlestown-Claremont town line on NH Route 12A, 1,200 feet southwest of NH Route 12A:

- Ap—0 to 10 inches, dark grayish brown (2.5Y 4/2) silt loam; weak fine granular structure; very friable; many fine roots; medium acid; abrupt smooth boundary.
- B21—10 to 16 inches, olive brown (2.5Y 4/4) silt loam; weak fine subangular blocky structure; very friable; common fine roots; medium acid; gradual wavy boundary.
- B22—16 to 30 inches, light olive brown (2.5Y 5/4) silt loam; common fine distinct gray (5Y 5/1) and yellowish brown (10YR 5/6) mottles; weak fine subangular blocky structure; friable; common fine roots; medium acid; clear wavy boundary.
- C1—30 to 48 inches, olive (5Y 4/3) silt loam; common fine distinct gray (5Y 5/1), dark brown (10YR 4/3), and yellowish brown (10YR 5/6) mottles; massive; friable; few fine roots; medium acid; clear smooth boundary.
- C2—48 to 60 inches; stratified light olive brown (2.5Y 5/4) very fine sandy loam and very fine sand; common fine to coarse distinct gray (5Y 5/1), olive gray (5Y 5/2), dark yellowish brown (10YR 4/4), and yellowish brown (10YR 5/6) mottles; massive; very friable; medium acid.

The solum thickness ranges from 10 to 36 inches. The A and B horizons are silt loam or very fine sandy loam. The C1 horizon is silt loam or very fine sandy loam. The C2 horizon ranges from silt loam to very fine sand. Reaction ranges from strongly acid to medium acid throughout the soil.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3.

The upper part of the B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 or 6. The lower part has hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4.

The B horizon is mottled in the lower part with gray, olive, brown, and yellowish brown.

The C horizon has hue of 5Y or 2.5Y, value of 4 to 6, and chroma of 1 to 4.

Stissing series

The Stissing series consists of deep, poorly drained soils that have a water table at or near the surface 6 to 8 months of the year. The soils formed in compact glacial till derived mainly from dark gray phyllite and schist. Stissing soils are in depressions and shallow drainageways and on slightly concave toe slopes on uplands. Slopes range from 0 to 8 percent.

Stissing soils are on the landscape with well drained Bernardston and Dutchess soils and moderately well

drained Pittstown soils. The Stissing and Pillsbury soils are on similar kinds of landforms, but the Stissing soils contain more silt than the Pillsbury soils.

Typical pedon of a Stissing silt loam, 0 to 5 percent slopes, City of Claremont, 2.1 miles west of Newport-Claremont town line and 4,080 feet north of NH Route 11-103:

- Ap—0 to 7 inches, very dark grayish brown (2.5Y 3/2) silt loam; weak medium granular structure; friable; many fine roots; 10 percent rock fragments of subrounded gravel and channers; strongly acid; clear smooth boundary.
- B21g—7 to 15 inches, olive gray (5Y 4/2) silt loam; many fine to coarse distinct olive brown (2.5Y 4/4), light olive brown (2.5Y 5/6), and gray (5Y 5/1) mottles; weak coarse granular structure; friable; few fine roots; 10 percent rock fragments, mostly subrounded gravel and channers, few cobblestones; medium acid; clear smooth boundary.
- B22g—15 to 19 inches, olive gray (5Y 4/2) silt loam; many fine to coarse distinct olive brown (2.5Y 4/4), light olive brown (2.5Y 5/4 and 5/6), and gray (5Y 5/1) mottles; weak medium subangular blocky structure; friable; very few fine roots; 10 percent rock fragments, mostly subrounded gravel and channers, few cobblestones; medium acid; clear smooth boundary.
- Cxg—19 to 60 inches, olive gray (5Y 4/2) and dark gray (5Y 4/1) silt loam; many coarse distinct olive brown (2.5Y 4/4) and olive (5Y 4/4, 5/6) mottles; massive; very firm; few widely spaced fracture faces with dark gray (5Y 4/1) interiors and olive brown (2.5Y 4/4) rinds that extend almost vertically; 15 percent rock fragments, mostly channers and subrounded gravel, few cobblestones; medium acid.

The solum thickness and the depth to the substratum range from 15 to 24 inches. The soil is loam or silt loam or their gravelly or channery analogs. Rock fragments make up 5 to 30 percent of the solum and 15 to 40 percent of the Cx horizon. Unless limed, the soil is strongly to medium acid.

The A horizon has hue of 10YR or 2.5Y, value of 2 to 4, and chroma of 1 or 2. In undisturbed pedons a thin O horizon is over a 3- to 8-inch-thick A1 horizon.

The B horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 or 2.

The Cx horizon is neutral and has value of 3 to 6, or it has hue of 5Y, value of 3 to 6, and chroma of 1 or 2. Consistence is firm or very firm.

The Stissing soils in this survey area are a taxadjunct to the Stissing series; they do not have a layer with chroma of 3 between depths of 7 and 30 inches, which is defined in the range for the series. This difference does not affect use or management.

Sunapee series

The Sunapee series consists of deep, moderately well drained soils in depressions and drainageways and on lower foot slopes of upland hills. Sunapee soils formed in stony loamy glacial till. Slopes range from 0 to 15 percent.

Sunapee soils are on the landscape with well drained Monadnock soils, well drained to somewhat excessively drained Hermon soils, moderately well drained Peru soils, poorly drained Lyme soils, and poorly drained to somewhat poorly drained Moosilauke soils. Sunapee soils do not have compact glacial till in the substratum, which is a characteristic of the Peru soils.

Typical pedon of Sunapee fine sandy loam in an area of Sunapee stony fine sandy loam, 3 to 8 percent slopes, town of Washington, 3,600 feet west-southwest of the village of East Washington:

- O21—3 to 2 inches, fresh and partially decomposed forest litter.
- O22—2 inches to 0, decomposed forest litter.
- A1—0 to 1 inch, black (10YR 2/1) fine sandy loam; weak fine granular structure; very friable; many fine and common medium roots; 20 percent rock fragments of gravel, cobblestones, and stones; extremely acid; abrupt smooth boundary.
- A2—1 to 3 inches, light brownish gray (10YR 6/2) fine sandy loam; weak fine granular structure; very friable; many fine common medium and few coarse roots; 20 percent rock fragments of gravel, cobblestones, and stones; extremely acid; abrupt smooth boundary.
- B21h—3 to 4 inches, dusky red (2.5YR-3/2) and dark reddish brown (2.5YR 3/4) fine sandy loam; weak medium granular structure; friable; many fine common medium and few coarse roots; 20 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; abrupt smooth boundary.
- B22ir—4 to 7 inches, reddish brown (5YR 4/4) and yellowish red (5YR 5/8) fine sandy loam; weak fine and medium granular structure; friable; many fine common medium and few coarse roots; 20 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; clear smooth boundary.
- B23ir—7 to 15 inches, strong brown (7.5YR 5/6) and yellowish brown (10YR 5/6) fine sandy loam; weak fine and medium granular structure; friable; common fine and medium roots; 20 percent rock fragments of gravel, cobblestones, and stones; very strongly acid; clear smooth boundary.
- B24ir—15 to 24 inches, yellowish brown (10YR 5/6) fine sandy loam; common fine and medium distinct reddish brown (5YR 5/4), yellowish red (5YR 5/6), and light olive gray (5Y 6/2) mottles; weak fine and medium granular structure; friable; common fine and medium roots; 20 percent rock fragments of gravel,

cobblestones, and stones; very strongly acid; clear wavy boundary.

C1—24 to 37 inches, grayish brown (2.5Y 5/2) and light olive brown (2.5Y 5/4) gravelly sandy loam; common fine to coarse distinct yellowish brown (10YR 5/6, 5/8) and light olive gray (5Y 6/2) mottles; massive; friable; few fine roots; 30 percent rock fragments of gravel, cobbles, and stones; very strongly acid; clear wavy boundary.

C2—37 to 60 inches, pale olive (5Y 6/3) and light olive gray (5Y 6/2) gravelly sandy loam; common fine to coarse distinct yellowish brown (10YR 5/6, 5/8), light olive brown (2.5Y 5/4), and light gray (5Y 7/2) mottles; massive; friable; 30 percent rock fragments of gravel, cobbles, and stones; very strongly acid.

The solum thickness ranges from 18 to 36 inches. Rock fragments make up 5 to 30 percent of the soil. Unless limed, the solum is extremely acid or very strongly acid and the C horizon ranges from extremely acid to medium acid. The depth to distinct or prominent mottling ranges from 14 to 26 inches.

The A1 horizon has hue of 5YR to 10YR, value of 2 or 3, and chroma of 1 or 2. Some pedons have an Ap horizon that has hue of 10YR and value and chroma of 2 to 4. The A2 horizon has hue of 7.5YR to 2.5Y, value of 5 to 7, and chroma of 1 or 2. The A horizon is fine sandy loam or loam or their gravelly analogs.

The B21h horizon has hue of 2.5YR or 5YR, value of 2 or 3, and chroma of 1 to 6. The B22ir and B23ir horizons have hue of 5YR to 10YR, value of 3 to 5, and chroma of 3 to 8. The B24ir horizon has hue of 7.5YR to 2.5Y, value of 4 or 5, and chroma of 3 to 6 and is distinctly or prominently mottled. The B horizon is fine sandy loam or sandy loam or their gravelly analogs.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6, and chroma of 2 to 4. It is fine sandy loam, sandy loam, or loamy sand or their gravelly analogs.

Sunday series

The Sunday series consists of deep, excessively drained soils that are subject to frequent flooding. Sunday soils formed in stratified sandy alluvial deposits on flood plains in major stream valleys. Slopes range from 0 to 3 percent.

Sunday soils are on the landscape with poorly drained Rumney soils, moderately well drained Podunk soils, and well drained Ondawa soils. Sunday soils are better drained and contain more sand than Rumney, Podunk, or Ondawa soils.

Typical pedon of a Sunday loamy sand in the town of Newport, village of North Newport, 3,660 feet south of North Newport and 160 feet west of the Sugar River:

O1—1 inch to 0, partially decomposed leaves, needles, and twigs.

A1—0 to 5 inches, dark brown (10YR 3/3) loamy sand; weak medium granular structure; very friable; many fine and common medium roots; very strongly acid; clear smooth boundary.

C1—5 to 11 inches, olive brown (2.5Y 4/4) loamy sand; single grain; loose; common fine and medium roots; strongly acid; abrupt smooth boundary.

C2—11 to 16 inches, olive brown (2.5Y 4/4) loamy fine sand; single grain; loose; common fine and few medium roots; strongly acid; abrupt smooth boundary.

C3—16 to 25 inches, light olive brown (2.5Y 5/4) loamy sand; single grain; loose; common fine and few medium roots; strongly acid; abrupt smooth boundary.

C4—25 to 30 inches, olive brown (2.5Y 4/4) sand; single grain; loose; few fine and medium roots; strongly acid; abrupt smooth boundary.

C5—30 to 36 inches, light olive brown (2.5Y 5/4) sand; single grain; loose; few fine and medium roots; strongly acid; abrupt smooth boundary.

C6—36 to 48 inches, olive brown (2.5Y 4/4) sand; single grain; loose; few fine and medium roots; strongly acid; abrupt smooth boundary.

C7—48 to 60 inches, light olive brown (2.5Y 5/4) sand; single grain; loose; few fine roots; 15 percent gravel mostly less than 1 inch in diameter; strongly acid.

The A horizon has hue of 10YR or 2.5Y, value of 3 or 5, and chroma of 1 to 3. It is loamy fine sand or loamy sand. Reaction ranges from very strongly acid to medium acid.

Individual layers of the C horizon have hue of 10YR or 2.5Y, value of 3 to 6, and chroma of 1 to 4. The individual layers mainly are loamy fine sand, loamy sand, sand, or coarse sand. Some pedons have strata of gravelly sand. Reaction ranges from very strongly acid to medium acid.

Udorthents

Udorthents consist of deep, well drained to excessively drained soils that have been used as fill material. They are on uplands and terraces, typically in areas adjacent to urban land.

Because these soils are so variable in composition, a typical pedon is not described.

The soils range from silt loam to coarse sand and their gravelly or very gravelly analogs to a depth of 60 inches or more. The content of coarse fragments ranges from 5 to 60 percent throughout. Fragments more than 3 inches in diameter generally make up less than 20 percent of the soil to a depth of 60 inches.

The A horizon generally has hue of 10YR or 2.5Y, value of 2 to 6, and chroma of 1 to 8.

The C horizon has hue of 5YR to 5Y, value of 2 to 8, and chroma of 1 to 8.

Unadilla Variant

The Unadilla Variant consists of deep, well drained soils that formed in lacustrine materials on terraces and lake plains. Slopes range from 3 to 50 percent.

Unadilla Variant soils are on the landscape with and formed in the same kind of materials as moderately well drained Scio soils and poorly drained Raynham soils. Unadilla Variant soils and well drained Agawam soils and excessively drained Windsor soils are on similar landforms. Unadilla Variant soils contain more silt and very fine sand than the Agawam or Windsor soils.

Typical pedon of Unadilla Variant silt loam, 3 to 8 percent slopes, City of Claremont, 1,250 feet east of the junction of the Boston and Main Railroad and NH Route 103, 150 feet north of NH Route 103:

- O1—1 inch to 0, fresh and partially decomposed leaves, needles, and twigs.
- A1—0 to 3 inches, dark brown (10YR 3/3) silt loam; weak medium granular structure; very friable; many fine roots; strongly acid; clear smooth boundary.
- B21—3 to 7 inches, olive brown (2.5Y 4/4) and light olive brown (2.5Y 5/4) silt loam; weak medium subangular blocky structure; friable; common fine roots; medium acid; gradual wavy boundary.
- B22—7 to 14 inches, olive brown (2.5Y 4/4) silt loam; weak medium subangular blocky structure; friable; common fine roots; medium acid; clear wavy boundary.
- B23—14 to 24 inches, olive (5Y 5/4) silt loam; massive; friable; few fine roots; medium acid; clear wavy boundary.
- C—24 to 60 inches; olive (5Y 5/3) silt loam; massive; firm; very few fine roots; few thin strata of fine sand below 40-inch depth; medium acid.

The solum thickness ranges from 20 to 36 inches. Unless limed, the soil is very strongly acid to medium acid in the solum and strongly acid to neutral in the C horizon.

The A1 horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 or 3. Some pedons have an Ap horizon that has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 4. The A horizon is silt loam or very fine sandy loam.

The upper part of the B horizon has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 to 6. The lower part of the B horizon has hue of 10YR to 5Y, value of 4 or 5, and chroma of 4 to 6. The B horizon is silt loam or very fine sandy loam.

The C horizon has hue of 2.5Y or 5Y, value of 4 to 6,

and chroma of 2 to 4. The C horizon above a depth of 40 inches is silt loam or very fine sandy loam. Below a depth of 40 inches, the individual layers are silt loam, very fine sandy loam, or loamy very fine sand. The C horizon commonly is stratified or varved.

Warwick series

The Warwick series consists of deep, somewhat excessively drained soils that formed in sandy and gravelly outwash materials on outwash plains, terraces, kames, and eskers. Slopes range from 3 to 15 percent.

Warwick soils are on the landscape with excessively drained Windsor soils and well drained Haven soils. The Warwick soils have less sand in the subsoil than the Quonset soils and have less sand in the surface layer and subsoil and more gravel than the Windsor soils. The Warwick soils have more sand and have more coarse fragments in the surface layer and subsoil than the Haven soils.

Typical pedon of a Warwick gravelly fine sandy loam, in an area of Warwick-Quonset gravelly fine sandy loam 3 to 8 percent slopes, 1.2 miles west of the Newport-Claremont town line and 3,800 feet north of NH Route 11-103:

- Ap—0 to 8 inches, dark brown (10YR 4/3) gravelly fine sandy loam; weak fine granular structure; very friable; many fine roots; 20 percent subrounded gravel, 10 percent subrounded cobblestones; strongly acid; clear smooth boundary.
- B21—8 to 15 inches, strong brown (7.5YR 5/6) gravelly fine sandy loam; weak fine and medium granular structure; very friable; common fine roots; 20 percent subrounded gravel, 10 percent subrounded cobblestones; strongly acid; gradual wavy boundary.
- B22—15 to 24 inches, yellowish brown (10YR 5/6) gravelly fine sandy loam; weak fine and medium granular structure; very friable; common fine roots; 40 percent subrounded gravel, 10 percent subrounded cobblestones; strongly acid; abrupt wavy boundary.
- IIC—24 to 60 inches, olive (5Y 5/3) and olive gray (5Y 4/2) very gravelly sand; single grain; loose; few fine roots that decrease with depth; 65 percent subrounded gravel, 10 percent subrounded cobblestones; strongly acid.

The solum thickness ranges from 20 to 30 inches. Coarse fragments make up 30 to 50 percent of the solum and 50 to 75 percent of the substratum. Dark phyllite fragments constitute one half or more of the coarse fragments. They are subrounded or flat. Unless limed, the soil is very strongly acid to medium acid in the solum and strongly acid to slightly acid in the substratum.

The Ap horizon has value of 3 or 4 and chroma of 2 to

4. The A horizon is gravelly fine sandy loam or gravelly sandy loam.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 4 or 5, and chroma of 4 to 8. The lower part has hue of 10YR or 2.5Y, value of 4 or 5, and chroma of 4 or 6. The B horizon is gravelly fine sandy loam or gravelly or very gravelly sandy loam.

The C horizon has hue of 2.5Y or 5Y, value of 4 or 5, and chroma of 1 to 4. Individual strata range from loamy sand to gravel.

Windsor series

The Windsor series consists of deep, excessively drained soils. Windsor soils formed in sandy glacial outwash deposits on terraces and outwash plains in major river and stream valleys. Slopes range from 0 to 50 percent.

Windsor soils are on the landscape with excessively drained Quonset soils, well drained Haven soils, and well drained Agawam soils. The Windsor soils contain less gravel than the Quonset soils and contain more sand in the surface layer and subsoil than the Agawam soils.

The Windsor soils contain more sand in the surface layer and subsoil and less gravel in the substratum than the Haven soils.

Typical pedon of Windsor loamy sand, 3 to 8 percent slopes, town of Charlestown, 1.1 miles south of the Charlestown-Claremont town line on NH Route 12A, 450 feet east of NH Route 12A:

- O1—1 inch to 0, fresh and partially decomposed leaves, twigs, and needles.
- A1—0 to 4 inches, dark brown (10YR 3/3) loamy sand; weak fine granular structure; very friable; many fine and common medium roots; very strongly acid; clear smooth boundary.
- B21—4 to 10 inches, yellowish brown (10YR 5/6) loamy sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.
- B22—10 to 18 inches, light olive brown (2.5Y 5/6) sand; single grain; loose; few fine roots; very strongly acid; gradual wavy boundary.
- B3—18 to 25 inches, light yellowish brown (2.5Y 6/4) sand; single grain; loose; few fine roots; very strongly acid; gradual wavy boundary.
- C—25 to 60 inches, pale olive (5Y 6/3) sand; single grain; loose; very few fine roots; very strongly acid.

The thickness of the solum is 20 to 32 inches. The content of gravel ranges from 0 to 5 percent in the solum and 0 to 10 percent in the C horizon. Except where limed, the soil is strongly acid or very strongly acid throughout.

The A horizon has hue of 10YR, value of 3 or 4, and chroma of 2 to 4. It is loamy sand or loamy fine sand.

The upper part of the B horizon has hue of 7.5YR or 10YR, value of 4 to 6, and chroma of 4 to 8. The lower part of the B horizon has hue of 10YR or 2.5Y, value of 5 to 6, and chroma of 2 to 6. The B horizon is loamy sand or loamy fine sand in the upper part and loamy sand, loamy fine sand, sand, or fine sand in the lower part.

The C horizon has hue of 2.5Y or 5Y, value of 5 to 7, and chroma of 2 to 4. It is sand or fine sand.

Winooski series

The Winooski series consists of deep, moderately well drained soils that are subject to frequent flooding. Winooski soils formed in stratified alluvial deposits on flood plains in major stream valleys. Slopes range from 0 to 3 percent.

Winooski soils are on the landscape with well drained Hadley soils, poorly drained Limerick soils, and very poorly drained Saco soils. Winooski and Podunk soils are on similar landscape positions, but the Winooski soils contain more silt and very fine sand than the Podunk soils.

Typical pedon of Winooski silt loam in a cultivated field, town of Charlestown, south Charlestown area, 1/2 mile south on NH Route 12 from the junction of NH Route 12 and NH Route 12A, 150 feet west of NH Route 12:

- Ap—0 to 9 inches, very dark grayish brown (2.5Y 3/2) silt loam; light brownish gray (2.5Y 6/2) dry; weak medium subangular blocky structure; friable; few fine roots; neutral; abrupt smooth boundary.
- C1—9 to 17 inches, olive (5Y 4/3) silt loam; massive; friable; few fine roots; slightly acid; clear wavy boundary.
- C2—17 to 48 inches, olive (5Y 4/3) silt loam; common fine distinct olive gray (5Y 5/2), grayish brown (2.5Y 5/2), dark yellowish brown (10YR 4/4), and dark brown (7.5YR 4/4) mottles; massive; very friable; slightly acid; abrupt smooth boundary.
- C3—48 to 60 inches, dark grayish brown (2.5Y 4/2) very fine sandy loam; common fine distinct olive gray (5Y 5/2), grayish brown (2.5Y 5/2), dark yellowish brown (10YR 4/4), and dark brown (7.5YR 4/4) mottles; massive; very friable; slightly acid.

The texture to a depth of 40 inches is silt loam or very fine sandy loam. Below 40 inches, the individual layers range from silt loam to fine sand. The soil is strongly acid to neutral to a depth of 35 inches and medium acid to neutral below a depth of 35 inches.

The Ap horizon has hue of 10YR or 2.5Y, value of 3 or 4, and chroma of 2 to 3.

Individual layers of the C horizon have hue of 10YR to 5Y, value of 4 or 5, and chroma of 2 to 4. The depth to mottles is 14 to 20 inches.

formation of the soils

Soils formed through the interaction of five major factors. They are parent material, climate, plant and animal life, relief, and time. The relative influence of each factor varies from place to place, but the combination of all five factors normally determines the kind of soil developed in any given place. Parent material, relief, and drainage account for most of differences among the soils in Sullivan County.

parent material

Parent material is the unconsolidated mass in which soils formed or are forming. It determines the mineralogical composition and contributes largely to the chemical characteristics of the soil. It also greatly influences the soil colors and the rate at which soil-forming processes take place.

The soils in Sullivan County formed in glacial till, glaciofluvial deposits (outwash), glaciolacustrine deposits (glacial lake sediments), recent alluvium, and organic materials. Most of the soil parent materials were left after the glacier melted about 14,000 years ago. Alluvial and organic materials are of recent origin and are currently being deposited.

Soils that formed in glacial till are the most extensive in the county and have a wide range in characteristics. The till material was greatly mixed and reworked by glaciation. The nature of the glacial till is most commonly a reflection of the underlying bedrock from which it was principally derived. For example, a coarse-textured till with a high proportion of fragments that was derived from a coarse-grained bedrock gives rise to a coarse-textured soil with a high proportion of rock fragments. Hermon soils are an example of such a soil. The medium-textured Dutchess soils are an example of soils that formed in till derived from fine-grained phyllite and schistose bedrock.

Some till masses were deposited in different ways. Tills laid down in the direction that the glacier was moving tend to be compact and firm. Soils developed in this type of till commonly have a compact and firm substratum. Marlow and Bernardston soils are examples of soils with a compact and firm substratum.

Soils that formed in glaciofluvial outwash deposits and other water-sorted deposits are generally sandy or sandy and gravelly. They are commonly underlain by stratified sand and gravel deposits. The Adams and Windsor soils, for example, are sandy soils underlain by stratified

sands. The Quonset and Colton soils are sandy and gravelly soils underlain by stratified sand and gravel. A few soils formed in outwash deposits that have contrasting materials 2 or 3 feet from the surface. The Haven soils, which have a loamy surface layer and subsoil and a sandy and gravelly substratum, are an example of a soil that formed in materials with contrasting particle size.

Soils that formed in glaciolacustrine sediments typically are medium textured and do not have coarse fragments. For the most part, such soils formed in thinly bedded or varved silt and very fine sand deposits. Unadilla Variant and Scio soils are examples of soils formed in glaciolacustrine deposits.

Soils on flood plains have formed and are forming in recent alluvial deposits. The Ondawa, Podunk and Rumney soils, for example, formed in moderately coarse textured alluvium commonly adjacent to streams on uplands. The Hadley, Winoski, and Limerick are examples of soils that formed in medium-textured alluvium, commonly in the Connecticut River Valley. Soils that formed in alluvium are young soils and show little evidence of profile development.

Some soils in Sullivan County formed in organic materials. They are the Greenwood, Chocorua, and Ossipee soils.

climate

Climate, particularly temperature, precipitation, and frost action, is influential in the soil-forming process. The kind of climate largely determines the type of weathering processes that will occur. It directly affects the type of vegetation in an area, which in turn will affect those soil-forming processes related to vegetation.

Sullivan County has a humid, continental-type climate with extreme seasonal changes in temperatures. Temperature and precipitation govern the rates of chemical and physical weathering of the soils. Moisture is sufficient enough to promote leaching of water soluble material down through the soil. Cold winter temperatures allow for frost action, which physically breaks apart rock fragments and promotes the granulation of soil material. The climate in the county allows the accumulation of organic matter in the surface layer of the soils.

Local variations in climate are reflected among the soils in the county. These soils in the western part of the

county in the Connecticut River Valley and adjacent uplands are on the average 2 or 3 degrees warmer than the soils east of this area. More detailed information on climate is in the section "General nature of the survey area."

plant and animal life

All living organisms including bacteria, fungi, vegetation, and animals, actively influence the soil-forming process by influencing the chemical and physical environment of the soils.

Sullivan County was originally in a native forest of mixed hardwoods and conifers. Hardwoods take up bases and nutrients from the soil and return them to the soil in the form of fallen leaves and twigs. Conifers take up nutrients also but use lesser amounts than hardwoods. The litter from conifers is more acid, and acidity promotes the leaching of bases from the soil. This difference in chemistry under different types of forests influences the nutrient levels in the soils. Some types of micro-organisms also promote acid conditions, and they too change the chemistry of the soil, which in turn influences the type of soil-forming processes that take place. Plants are also responsible for the amount of organic matter in the surface layer and for the color and structure of the surface layer of the soil.

Larger animals, such as earthworms and burrowing animals, mix the soil and change its physical characteristics. They generally make the soil more permeable to air and water. Their waste products cause aggregation of the soil particles and improve soil structure. Microbial animals decompose organic materials and return the products of decomposition to the soil.

Man's activities have significantly changed many of the soils in the county. Clearing and farming the land have accelerated erosion on most sloping soils. The chemical and physical properties, particularly of the plow layer, have changed with cultivation and the addition of lime and fertilizer. Artificial drainage has altered the environment of naturally wet soils.

relief

The shape of the land, the slope, and the position of an area on the landscape greatly influence the kinds of soils formed.

Many soils in Sullivan County that formed in identical parent material under the same climatic conditions show differences because of their position on the landscape (fig. 9). These differences are largely a result of varying drainage conditions. Some of the water from rain or snowmelt on higher lying soils is lost as runoff to soils in adjacent, lower lying areas. This excess water typically results in differences in the amount of water that is absorbed by the soils in different parts of the landscape. Soils that formed in sloping areas where runoff is

moderate or rapid generally are well drained and have a bright-colored, unmottled subsoil. In more gently sloping areas or in areas where runoff comes from upslope, the soils for short periods generally exhibit some evidence of wetness, for example, mottling in the subsoil. In level areas or in drainageways and depressions where water accumulates, the soils show strong evidence of wetness. Naturally wet soils typically have a dark-colored surface layer and an intensely mottled or gray subsoil. In the lowest positions where water accumulates, the soils typically are gray throughout or are muck.

Relief also has an effect on the temperature regime in which the soils formed. Generally, the higher the elevation, the cooler the temperature. In Sullivan County this difference in temperature is most pronounced between the lower Connecticut River Valley area and the higher uplands in the eastern part of the county.

time

The formation of soils is a continuing process. Generally, most of the soils in Sullivan County have been forming since the last ice sheet of the glaciers receded about 14,000 years ago. On the geologic time scale, this is a short period.

The time required for a soil to form depends on the other soil-forming factors. For example, some parent materials, such as quartz sand, may change very little even if exposed for centuries. The relative degree of horizon development determines whether a soil is young or old. Soils that formed in recent geologic materials, such as alluvium, have indistinct horizons, weak color differences between horizons, and little other evidence of soil development. Such soils are immature, or young. Hadley and Ondawa are examples of immature soils in Sullivan County. Soils that have well expressed profile characteristics are considered to have reached a degree of maturity. Examples of relatively mature soils in Sullivan County are the Monadnock and Adams soils, which have been forming since glaciation.

bedrock geology

Sullivan County is underlain mostly by metamorphosed sedimentary and igneous bedrock. The bedrock in the western third of the county is mainly from the Orfordville and Littleton formations. These formations dominantly are fine-grained metamorphosed sedimentary rocks of marine origin. The Orfordville formation was formed in the first mountain-building period, about 500 million years ago. The Littleton formation was formed about 370 million years ago in the second mountain-building period.

The bedrock in the rest of the county is mainly Bethlehem gneiss, Kirsman quartz monzonite, and

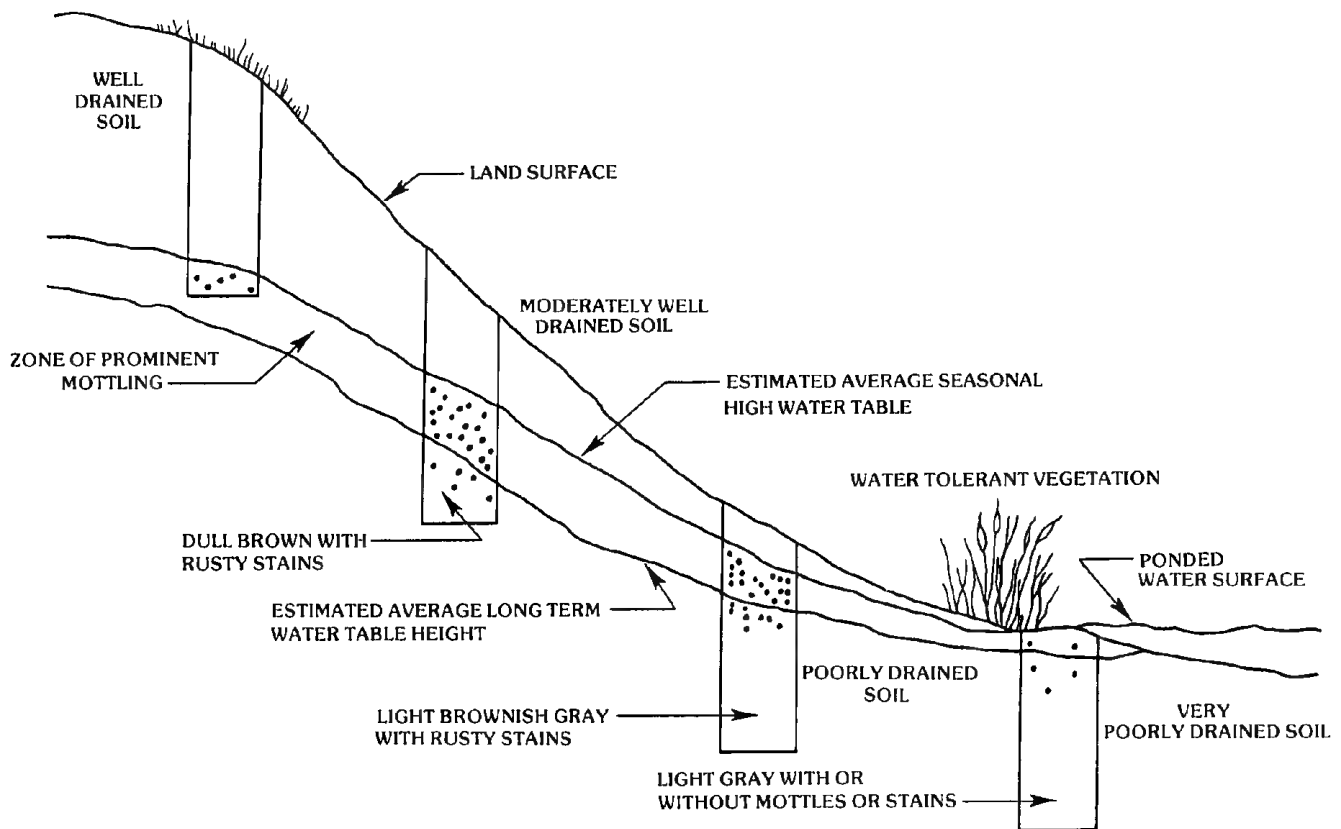


Figure 9.—The relationship between slope and soil drainage classes.

coarse-grained metamorphic rock of the Littleton formation. The Bethlehem gneiss and the Kinsman quartz monzonite are metamorphosed igneous rock formed in the second mountain-building period. The Bethlehem gneiss is mainly in the central part of the county. The Kinsman quartz monzonite and the coarse-grained rocks of the Littleton formation are mainly in the southeastern and northeastern corners of the county.

glacial geology

The landscape in Sullivan County is in large part a result of the movement of the last glacier, the Wisconsin glacier, that covered the county and receded from the area about 14,000 years ago. This glacier moved through the area in a north-to-south direction in a mass of ice possibly a mile or more thick and scraped and scoured the land surface as it moved. Large masses of stones, boulders, and earthy materials were picked up and transported by the ice. This material was crushed and mixed as the glacier slowly moved south. In many

places the scouring action of the glacier rounded the hills and mountains.

As the climate became warmer, the ice sheet receded to the north and dropped the debris it had been carrying. The unsorted material deposited directly from the wasting ice sheet is called glacial till. The glacial till in most places now forms an irregular blanket over bedrock. Generally, the till is thinner on mountaintops and higher hills. Some parts of the mountaintops are exposed bedrock. The till is generally thicker on lower hills and on the sides of higher hills and mountains. It is commonly more compact and denser on north- and west-facing slopes.

Meltwater from the glacial ice picked up sand, gravel, and other earthy materials and redeposited them on the landscape. The redeposited materials are called glacial fluvial deposits. Kames, eskers, plains, and terraces are types of glacial fluvial deposits. These sorted deposits are primarily in valleys throughout the county.

There is evidence that the Connecticut River Valley was once glacial Lake Hitchcock. Lake Hitchcock was

formed by a giant ice dam located far to the south of the county. The highest sand plains and terraces in the Connecticut River Valley are the remains of the floor of Lake Hitchcock. Glacial Lake Hitchcock in time gave way and was replaced by glacial Lake Upham. Silty

sediments were deposited over sandy materials on the floor of Lake Upham. These deposits are now the lower plains and terraces of the Connecticut River Valley. After Lake Upham drained, the river began forming the flood plain that exists today.

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glossary

Ablation till. Loose, permeable till deposited during the final downwasting of glacial ice. Lenses of crudely sorted sand and gravel are common.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 40-inch profile or to a limiting layer is expressed as—

	<i>Inches</i>
Very low.....	0 to 2.4
Low.....	2.4 to 3.2
Moderate.....	3.2 to 5.2
High.....	More than 5.2

Basal till. Compact glacial till deposited beneath the ice.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Channery soil. A soil that is, by volume, more than 15 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches along the longest axis. A single piece is called a fragment.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Coarse fragments. If round, mineral or rock particles 2 millimeters to 25 centimeters (10 inches) in diameter; if flat, mineral or rock particles (flagstone) 15.2 to 38.1 centimeters (6 to 15 inches) long.

Coarse textured soil. Sand or loamy sand.

Cobblestone (or cobble). A rounded or partly rounded fragment of rock 3 to 10 inches (7.5 to 25 centimeters) in diameter.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Cemented.—Hard; little affected by moistening.

Contour stripcropping. Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Deferred grazing. Postponing grazing or arresting grazing for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below

the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients.

Drainage, surface. Runoff, or surface flow of water, from an area.

Drumlin. A low, smooth, elongated oval hill, mound, or ridge of compact glacial till. The longer axis is parallel to the path of the glacier and commonly has a blunt nose pointing in the direction from which the ice approached.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes the surface.

Esker (geology). A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the oven-dry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity*, *normal moisture capacity*, or *capillary capacity*.

Fine textured soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist, 6 to 15 inches (15 to 37.5 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Glacial drift (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also the sorted and unsorted material deposited by streams flowing from glaciers.

Glacial outwash (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial melt water.

Glacial till (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Hemic soil material (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an upper case letter represents the major horizons. Numbers or lower case letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the *Soil Survey Manual*. The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue at the surface of a mineral soil.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil does not have a B horizon, the A horizon alone is the solum.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, the Roman numeral II precedes the letter C.

R layer.—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Igneous rock. Rock formed by solidification of molten silicate materials.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake in inches per hour is expressed as follows:

Less than 0.2.....	very low
0.2 to 0.4.....	low
0.4 to 0.75.....	moderately low
0.75 to 1.25.....	moderate
1.25 to 1.75.....	moderately high
1.75 to 2.5.....	high
More than 2.5.....	very high

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are—

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing

crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame (geology). An irregular, short ridge or hill of stratified glacial drift.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Large stones (in tables). Rock fragments 3 inches (7.5 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. The soil is not strong enough to support loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Sandy loam and fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, and silty clay loam.

Moraine (geology). An accumulation of earth, stones, and other debris deposited by a glacier. Some types are terminal, lateral, medial, and ground.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few*, *common*, and *many*; size—*fine*, *medium*, and *coarse*; and contrast—*faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).

Muck. Dark colored, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value between 6.6 and 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition.

Outwash, glacial. Stratified sand and gravel produced by glaciers and carried, sorted, and deposited by glacial melt water.

Outwash plain. A landform of mainly sandy or coarse textured material of glaciofluvial origin. An outwash plain is commonly smooth; where pitted, it is generally low in relief.

Pan. A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan*, *fragipan*, *claypan*, *plowpan*, and *traffic pan*.

Parent material. The unconsolidated organic and mineral material in which soil forms.

Peat. Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality of the soil that enables water to move downward through the profile. Permeability is measured as the number of inches per hour that water moves downward through the saturated soil. Terms describing permeability are:

Very slow.....	less than 0.06 inch
Slow.....	0.06 to 0.20 inch
Moderately slow.....	0.2 to 0.6 inch
Moderate.....	0.6 inch to 2.0 inches
Moderately rapid.....	2.0 to 6.0 inches
Rapid.....	6.0 to 20 inches
Very rapid.....	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Ponding. Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

	pH
Extremely acid.....	Below 4.5
Very strongly acid.....	4.5 to 5.0
Strongly acid.....	5.1 to 5.5
Medium acid.....	5.6 to 6.0
Slightly acid.....	6.1 to 6.5
Neutral.....	6.6 to 7.3
Mildly alkaline.....	7.4 to 7.8
Moderately alkaline.....	7.9 to 8.4
Strongly alkaline.....	8.5 to 9.0
Very strongly alkaline.....	9.1 and higher

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Rippable. Bedrock or hardpan can be excavated using a single-tooth ripping attachment mounted on a tractor with a 200-300 draw bar horsepower rating.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site Index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope (in tables). Slope is great enough that special practices are required to insure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.5 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil separates. Mineral particles less than 2 mm in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows:

	Millime- ters
Very coarse sand.....	2.0 to 1.0
Coarse sand.....	1.0 to 0.5
Medium sand.....	0.5 to 0.25
Fine sand.....	0.25 to 0.10
Very fine sand.....	0.10 to 0.05
Silt.....	0.05 to 0.002
Clay.....	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and plant and animal activities are largely confined to the solum.

Stone line. A concentration of coarse fragments in a soil. Generally it is indicative of an old weathered surface. In a cross section, the line may be one fragment or more thick. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material too thin for the specified use.

Till plain. An extensive flat to undulating area underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial melt water. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variant, soil. A soil having properties sufficiently different from those of other known soils to justify a new series name, but occurring in such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve. A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by melt water streams, in a glacial lake or other body of still water in front of a glacier.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

[Data were recorded in the period 1951-79 at Lebanon, New Hampshire.]

Month	Temperature						Precipitation				
	Average daily maximum	Average daily minimum	Average	2 years in 10 will have--		Average number of growing degree days	Average	2 years in 10 will have--		Average number of days with 0.10 inch or more	Average snowfall
				Maximum temperature higher than--	Minimum temperature lower than--			Less than--	More than--		
	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>°F</u>	<u>Units</u>	<u>In</u>	<u>In</u>	<u>In</u>		<u>In</u>
January----	28.4	5.8	17.1	52	-23	0	2.48	1.30	3.51	7	18.0
February---	31.9	8.5	20.2	54	-25	0	2.25	1.57	2.86	6	17.2
March-----	40.7	20.3	30.5	69	-8	21	2.53	1.53	3.42	7	13.1
April-----	54.6	30.9	42.8	83	12	129	2.88	1.99	3.68	7	4.0
May-----	67.3	41.0	54.2	90	24	445	3.41	2.09	4.59	8	.1
June-----	76.7	51.1	63.9	95	32	717	2.78	1.34	4.02	7	.0
July-----	81.1	55.7	68.4	95	41	880	3.07	1.77	4.23	6	.0
August-----	78.6	53.8	66.2	93	37	812	3.28	1.91	4.50	6	.0
September--	70.2	46.1	58.2	90	27	546	3.11	1.69	4.35	6	.0
October----	59.2	35.6	47.4	81	16	242	2.84	1.39	4.09	6	.3
November---	45.0	27.2	36.1	68	5	50	3.27	1.94	4.46	7	5.1
December---	32.2	13.2	22.7	57	-16	11	3.00	1.68	4.15	7	17.8
Yearly:											
Average--	55.5	32.4	44.0	---	---	---	---	---	---	---	---
Extreme--	---	---	---	96	-27	---	---	---	---	---	---
Total----	---	---	---	---	---	3,853	34.90	29.93	39.98	80	75.6

¹A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40° F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

[Data were recorded in the period 1951-79
at Lebanon, New Hampshire]

Probability	Temperature		
	24°F or lower	28°F or lower	32°F or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 7	May 24	June 3
2 years in 10 later than--	May 2	May 18	May 29
5 years in 10 later than--	April 21	May 7	May 20
First freezing temperature in fall:			
1 year in 10 earlier than--	October 2	September 22	September 13
2 years in 10 earlier than--	October 8	September 27	September 18
5 years in 10 earlier than--	October 19	October 8	September 28

TABLE 3.--GROWING SEASON

[Data were recorded in the period 1951-79
at Lebanon, New Hampshire]

Probability	Daily minimum temperature during growing season		
	Higher than 24°F Days	Higher than 28°F Days	Higher than 32°F Days
9 years in 10	154	127	107
8 years in 10	163	136	115
5 years in 10	181	153	130
2 years in 10	198	171	145
1 year in 10	207	180	153

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
AdA	Adams loamy sand, 0 to 3 percent slopes-----	440	0.1
AdB	Adams loamy sand, 3 to 8 percent slopes-----	990	0.3
AdC	Adams loamy sand, 8 to 15 percent slopes-----	935	0.3
AdE	Adams loamy sand, 15 to 50 percent slopes-----	1,045	0.3
AgA	Agawam very fine sandy loam, 0 to 3 percent slopes-----	650	0.2
AgB	Agawam very fine sandy loam, 3 to 8 percent slopes-----	730	0.2
BdB	Bernardston silt loam, 3 to 8 percent slopes-----	1,965	0.6
BdC	Bernardston silt loam, 8 to 15 percent slopes-----	2,590	0.8
BdD	Bernardston silt loam, 15 to 25 percent slopes-----	1,530	0.4
BeB	Bernardston stony silt loam, 3 to 8 percent slopes-----	420	0.1
BeC	Bernardston stony silt loam, 8 to 15 percent slopes-----	2,010	0.6
BeD	Bernardston stony silt loam, 15 to 25 percent slopes-----	2,350	0.7
BeE	Bernardston stony silt loam, 25 to 50 percent slopes-----	1,205	0.3
Bp	Borochemists, ponded-----	1,375	0.4
CaB	Cardigan-Kearsarge silt loams, 3 to 8 percent slopes-----	880	0.3
CaC	Cardigan-Kearsarge silt loams, 8 to 15 percent slopes-----	3,430	1.0
CaD	Cardigan-Kearsarge silt loams, 15 to 25 percent slopes-----	1,715	0.5
CbC	Cardigan-Kearsarge-Rock outcrop complex, 8 to 15 percent slopes-----	8,060	2.3
CbD	Cardigan-Kearsarge-Rock outcrop complex, 15 to 25 percent slopes-----	9,200	2.7
Ch	Chocorua mucky peat-----	1,155	0.3
CoA	Colton sandy loam, 0 to 3 percent slopes-----	790	0.2
CoB	Colton sandy loam, 3 to 8 percent slopes-----	2,050	0.6
CoC	Colton sandy loam, 8 to 15 percent slopes-----	1,650	0.5
CoE	Colton sandy loam, 15 to 50 percent slopes-----	2,270	0.7
CyA	Croghan loamy fine sand, 0 to 5 percent slopes-----	810	0.2
DtB	Dutchess silt loam, 3 to 8 percent slopes-----	670	0.2
DtC	Dutchess silt loam, 8 to 15 percent slopes-----	1,040	0.3
DtD	Dutchess silt loam, 15 to 25 percent slopes-----	700	0.2
DuC	Dutchess stony silt loam, 8 to 15 percent slopes-----	2,200	0.6
DuD	Dutchess stony silt loam, 15 to 25 percent slopes-----	2,630	0.8
DuE	Dutchess stony silt loam, 25 to 50 percent slopes-----	1,350	0.4
GW	Greenwood mucky peat-----	1,910	0.6
Ha	Hadley silt loam, frequently flooded-----	175	0.1
Hb	Hadley silt loam, occasionally flooded-----	515	0.1
HcA	Haven very fine sandy loam, 0 to 3 percent slopes-----	980	0.3
HcB	Haven very fine sandy loam, 3 to 8 percent slopes-----	1,540	0.4
HcC	Haven very fine sandy loam, 8 to 15 percent slopes-----	1,055	0.3
HeB	Hermon fine sandy loam, 3 to 8 percent slopes-----	840	0.2
HeC	Hermon fine sandy loam, 8 to 15 percent slopes-----	690	0.2
HeD	Hermon fine sandy loam, 15 to 25 percent slopes-----	315	0.1
HmB	Hermon stony fine sandy loam, 3 to 8 percent slopes-----	1,615	0.5
HmC	Hermon stony fine sandy loam, 8 to 15 percent slopes-----	5,490	1.6
HmD	Hermon stony fine sandy loam, 15 to 25 percent slopes-----	2,980	0.9
KeE	Kearsarge-Cardigan-Rock outcrop complex, 25 to 50 percent slopes-----	6,670	1.9
Lk	Limerick silt loam-----	690	0.2
LsE	Lyman-Monadnock-Rock outcrop complex, 25 to 50 percent slopes-----	22,320	6.5
LuA	Lyne-Moosilauke loams, 0 to 3 percent slopes-----	1,355	0.4
LyA	Lyne-Moosilauke stony loams, 0 to 3 percent slopes-----	6,655	1.9
LyB	Lyne-Moosilauke stony loams, 3 to 8 percent slopes-----	2,790	0.8
MaB	Marlow loam, 3 to 8 percent slopes-----	4,500	1.3
MaC	Marlow loam, 8 to 15 percent slopes-----	4,830	1.4
MaD	Marlow loam, 15 to 25 percent slopes-----	1,450	0.4
MbB	Marlow stony loam, 3 to 8 percent slopes-----	3,390	1.0
MbC	Marlow stony loam, 8 to 15 percent slopes-----	13,680	4.0
MbD	Marlow stony loam, 15 to 25 percent slopes-----	11,770	3.4
MbE	Marlow stony loam, 25 to 50 percent slopes-----	4,770	1.3
McB	Monadnock fine sandy loam, 3 to 8 percent slopes-----	1,345	0.4
McC	Monadnock fine sandy loam, 8 to 15 percent slopes-----	1,360	0.4
McD	Monadnock fine sandy loam, 15 to 25 percent slopes-----	370	0.1
MfB	Monadnock stony fine sandy loam, 3 to 8 percent slopes-----	2,390	0.7
MfC	Monadnock stony fine sandy loam, 8 to 15 percent slopes-----	11,520	3.3
MfD	Monadnock stony fine sandy loam, 15 to 25 percent slopes-----	7,620	2.2
MrC	Monadnock-Hermon association, very stony, sloping-----	5,590	1.6
MrD	Monadnock-Hermon association, very stony, moderately steep-----	7,040	2.0
MrE	Monadnock-Hermon association, very stony, steep-----	5,100	1.5
MuD	Monadnock-Hermon association, extremely bouldery, moderately steep-----	3,090	0.9
MvB	Monadnock-Lyman stony fine sandy loams, 3 to 8 percent slopes-----	2,310	0.7
MvC	Monadnock-Lyman stony fine sandy loams, 8 to 15 percent slopes-----	9,180	2.7
MvD	Monadnock-Lyman stony fine sandy loams, 15 to 25 percent slopes-----	4,190	1.2
MwB	Monadnock-Lyman-Rock outcrop complex, 3 to 8 percent slopes-----	2,210	0.6

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
MwC	Monadnock-Lyman-Rock outcrop complex, 8 to 15 percent slopes-----	25,900	7.5
MwD	Monadnock-Lyman-Rock outcrop complex, 15 to 25 percent slopes-----	22,800	6.6
Na	Naumburg loamy sand-----	1,210	0.4
NnA	Ninigret fine sandy loam, 0 to 5 percent slopes-----	465	0.1
Of	Ondawa fine sandy loam-----	730	0.2
Ot	Ossipee mucky peat-----	1,595	0.5
PcA	Peru loam, 0 to 3 percent slopes-----	600	0.2
PcB	Peru loam, 3 to 8 percent slopes-----	2,670	0.8
PcC	Peru loam, 8 to 15 percent slopes-----	545	0.2
PeB	Peru stony loam, 0 to 8 percent slopes-----	10,550	3.1
PeC	Peru stony loam, 8 to 15 percent slopes-----	5,540	1.6
PeD	Peru stony loam, 15 to 25 percent slopes-----	390	0.1
PgA	Pillsbury loam, 0 to 3 percent slopes-----	375	0.1
PlA	Pillsbury stony loam, 0 to 3 percent slopes-----	2,810	0.8
PlB	Pillsbury stony loam, 3 to 8 percent slopes-----	1,795	0.5
Pr	Pits, gravel-----	860	0.2
PtA	Pittstown silt loam, 0 to 3 percent slopes-----	310	0.1
PtB	Pittstown silt loam, 3 to 8 percent slopes-----	1,970	0.6
PtC	Pittstown silt loam, 8 to 15 percent slopes-----	655	0.2
PvB	Pittstown stony silt loam, 3 to 8 percent slopes-----	2,000	0.6
PvC	Pittstown stony silt loam, 8 to 15 percent slopes-----	2,020	0.6
Pw	Podunk fine sandy loam-----	1,620	0.5
QsC	Quonset-Warwick gravelly fine sandy loams, 8 to 15 percent slopes-----	635	0.2
QsD	Quonset gravelly fine sandy loam, 15 to 35 percent slopes-----	1,230	0.4
Ra	Raynham silt loam-----	960	0.2
Ro	Rock outcrop-----	1,100	0.3
Ru	Rumney loam-----	3,050	0.9
Sa	Saco silt loam-----	375	0.1
Sb	Saco Variant mucky silt loam-----	490	0.1
SdA	Scio silt loam, 0 to 3 percent slopes-----	400	0.1
SdB	Scio silt loam, 3 to 8 percent slopes-----	385	0.1
SgA	Stissing silt loam, 0 to 5 percent slopes-----	605	0.2
ShA	Stissing stony silt loam, 0 to 3 percent slopes-----	535	0.1
ShB	Stissing stony silt loam, 3 to 8 percent slopes-----	500	0.1
SnA	Sunapee fine sandy loam, 0 to 3 percent slopes-----	305	0.1
SnB	Sunapee fine sandy loam, 3 to 8 percent slopes-----	1,210	0.4
SoB	Sunapee stony fine sandy loam, 3 to 8 percent slopes-----	2,975	0.9
SoC	Sunapee stony fine sandy loam, 8 to 15 percent slopes-----	1,120	0.3
Su	Sunday loamy sand-----	300	0.1
Ub	Udorthents, smoothed-----	365	0.1
UnB	Unadilla Variant silt loam, 3 to 8 percent slopes-----	620	0.2
UnC	Unadilla Variant silt loam, 8 to 15 percent slopes-----	270	0.1
UnE	Unadilla Variant silt loam, 15 to 50 percent slopes-----	1,010	0.3
Ur	Urban land-----	265	0.1
WaB	Warwick-Quonset gravelly fine sandy loams, 3 to 8 percent slopes-----	1,055	0.3
WdA	Windsor loamy sand, 0 to 3 percent slopes-----	800	0.2
WdB	Windsor loamy sand, 3 to 8 percent slopes-----	1,680	0.5
WdC	Windsor loamy sand, 8 to 15 percent slopes-----	560	0.2
WdE	Windsor loamy sand, 15 to 50 percent slopes-----	1,840	0.5
Wn	Winooski silt loam-----	305	0.1
W	Water-----	7,288	2.1
	Total-----	344,768	100.0

TABLE 5.--PRIME FARMLAND

[Only the soils considered prime farmland are listed. Urban or built-up areas of the soils listed are not considered prime farmland]

Map symbol	Soil name
AgA	Agawam very fine sandy loam, 0 to 3 percent slopes
AgB	Agawam very fine sandy loam, 3 to 8 percent slopes
BdB	Bernardston silt loam, 3 to 8 percent slopes
DtB	Dutchess silt loam, 3 to 8 percent slopes
Ha	Hadley silt loam, frequently flooded
Hb	Hadley silt loam, occasionally flooded
HcA	Haven very fine sandy loam, 0 to 3 percent slopes
MaB	Marlow loam, 3 to 8 percent slopes
McB	Monadnock fine sandy loam, 3 to 8 percent slopes
NnA	Ninigret fine sandy loam, 0 to 5 percent slopes
Of	Ondawa fine sandy loam
PcA	Peru loam, 0 to 3 percent slopes
PcB	Peru loam, 3 to 8 percent slopes
PtA	Pittstown silt loam, 0 to 3 percent slopes
PtB	Pittstown silt loam, 3 to 8 percent slopes
SdA	Scio silt loam, 0 to 3 percent slopes
SnA	Sunapee fine sandy loam, 0 to 3 percent slopes
SnB	Sunapee fine sandy loam, 3 to 8 percent slopes
Wn	Winooski silt loam

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Corn silage	Alfalfa hay	Grass- legume hay	Grass hay	Grass-clover	Pasture
	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>AUM*</u>	<u>AUM*</u>
AdA, AdB----- Adams	12	---	2.5	---	4.5	---
AdC----- Adams	12	---	2.5	---	4.5	---
AdE----- Adams	---	---	---	---	---	---
AgA----- Agawam	24	5	4.5	---	8.5	---
AgB----- Agawam	24	5	4.5	---	8.5	---
BdB----- Bernardston	22	4.5	4.0	---	7.5	---
BdC----- Bernardston	20	4.0	3.5	---	6.5	---
BdD----- Bernardston	18	3.5	3.0	---	5.5	---
BeB, BeC, BeD, BeE----- Bernardston	---	---	---	---	---	3.5
Bp**. Borochemists						
CaB----- Cardigan-Kearsarge	18	3.8	---	3.2	6.3	---
CaC----- Cardigan-Kearsarge	17	3.5	---	2.8	5.5	---
CaD----- Cardigan-Kearsarge	---	---	---	---	---	---
CbC, CbD----- Cardigan-Kearsarge-Rock outcrop	---	---	---	---	---	3.5
Ch----- Chocorua	---	---	---	---	---	---
CoA----- Colton	12	2.5	2.0	---	5.0	---
CoB----- Colton	12	2.5	2.0	---	5.0	---
CoC----- Colton	---	2.5	2.0	---	5.0	---
CoE----- Colton	---	---	---	---	---	---

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass- legume hay	Grass hay	Grass-clover	Pasture
	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>AUM#</u>	<u>AUM#</u>
CyA----- Croghan	14	3.0	3.0	---	5.5	---
DtB----- Dutchess	22	4.5	---	3.5	---	---
DtC----- Dutchess	20	4.0	---	3.5	---	---
DtD----- Dutchess	18	3.5	---	3.0	---	---
DuC, DuD, DuE----- Dutchess	---	---	---	---	---	3.5
Gw----- Greenwood	---	---	---	---	---	---
Ha, Hb----- Hadley	28	5.0	4.5	---	8.5	---
HcA----- Haven	24	5.0	4.5	---	8.5	---
HcB----- Haven	24	5.0	4.5	---	8.5	---
HcC----- Haven	22	4.5	4.0	---	7.5	---
HeB----- Hermon	16	4.0	3.0	3.0	7.7	---
HeC----- Hermon	14	4.0	3.0	3.0	7.7	---
HeD----- Hermon	12	3.5	2.5	2.5	6.7	---
HmB----- Hermon	16	4.0	3.0	3.0	---	3.5
HmC----- Hermon	14	4.0	3.0	3.0	---	3.5
HmD----- Hermon	12	3.5	2.5	2.5	---	3.5
KeE----- Kearsarge-Cardigan-Rock outcrop	---	---	---	---	---	---
Lk----- Limerick	20	---	3.5	---	6.6	---
LsE----- Lyman-Monadnock-Rock outcrop	---	---	---	---	---	3.5
LuA----- Lyme-Moosilauke	15	---	3.3	3.0	5.7	---

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass- legume hay	Grass hay	Grass-clover	Pasture
	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>AUM*</u>	<u>AUM*</u>
LyA, LyB----- Lyne-Moosilauke	---	---	---	---	---	3.5
MaB----- Marlow	22	4.5	4.0	4.0	8.5	---
MaC----- Marlow	20	4.5	4.0	4.0	8.5	---
MaD----- Marlow	18	4.0	3.5	3.5	7.5	---
MbB, MbC, MbD, MbE----- Marlow	---	---	---	---	---	3.5
McB----- Monadnock	18	4.0	4.0	3.5	6.6	---
McC----- Monadnock	16	4.0	3.5	3.0	5.7	---
McD----- Monadnock	14	3.5	3.0	2.5	4.7	---
MfB, MfC, MfD----- Monadnock	---	---	---	---	---	3.5
MrC**, MrD**, MrE**, MuD**: Monadnock-----	---	---	---	---	---	3.5
Hermon-----	---	---	---	---	---	3.5
MvB, MvC, MvD----- Monadnock-Lyman	---	---	---	---	---	3.5
MwB, MwC, MwD----- Monadnock-Lyman-Rock outcrop	---	---	---	---	---	3.5
Na----- Naumburg	14	---	---	---	5.5	---
NnA----- Ninigret	22	4.0	3.5	4.0	5.8	---
Of----- Ondawa	26	4.5	4.0	---	8.5	---

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass- legume hay	Grass hay	Grass-clover	Pasture
	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>AUM*</u>	<u>AUM*</u>
Ot----- Ossipee	---	---	---	---	---	---
PcA----- Peru	20	4.0	4.0	4.0	8.0	---
PcB----- Peru	20	4.0	4.0	4.0	8.0	---
PcC----- Peru	18	4.0	4.0	4.0	8.0	---
PeB, PeC, PeD----- Peru	---	---	---	---	---	3.5
PgA----- Pillsbury	16	---	3.5	3.0	6.0	---
PlA, PlB----- Pillsbury	---	---	---	---	---	3.5
Pr**. Pits						
PtA,° PtB----- Pittstown	20	4.0	3.5	---	6.5	---
PtC----- Pittstown	18	4.0	3.5	---	6.5	---
PvB, PvC----- Pittstown	---	---	---	---	---	3.5
Pw----- Podunk	24	4.0	4.5	4.5	8.5	---
QsC----- Quonset-Warwick	---	---	---	---	4.5	---
QsD----- Quonset	---	---	---	---	---	---
Ra----- Raynham	18	---	3.5	4.0	6.5	---
Ro**. Rock outcrop						
Ru----- Rumney	20	---	3.5	4.0	6.5	---
Sa----- Saco	---	---	---	---	---	---
Sb----- Saco Variant	---	---	---	---	---	---
SdA----- Scio	22	4.5	3.5	---	8.5	---
SdB----- Scio	22	4.5	3.5	---	8.5	---
SgA----- Stissing	18	3.0	3.0	3.0	5.5	---
ShA, ShB----- Stissing	---	---	---	---	---	3.5

See footnotes at end of table.

TABLE 6.--YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Corn silage	Alfalfa hay	Grass- legume hay	Grass hay	Grass-clover	Pasture
	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>Ton</u>	<u>AUM*</u>	<u>AUM*</u>
SnA, SnB----- Sunapee	20	3.5	---	3.0	6.0	---
SoB, SoC----- Sunapee	---	---	---	---	---	3.5
Su----- Sunday	12	2.5	---	2.0	---	3.5
Ub**. Udorthents						
UnB----- Unadilla Variant	24	5.0	3.5	---	6.5	---
UnC----- Unadilla Variant	22	4.5	3.5	---	6.5	---
UnE----- Unadilla Variant	18	3.5	3.0	---	6.0	---
Ur**. Urban land						
WaB----- Warwick-Quonset	18	3.7	2.9	---	6.5	---
WdA, WdB----- Windsor	14	3.0	2.5	2.0	5.5	---
WdC----- Windsor	12	3.0	2.5	2.0	5.0	---
WdE----- Windsor	---	---	---	---	---	---
Wn----- Winooski	26	4.5	4.0	---	7.5	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
AdA, AdB, AdC----- Adams	5s	Slight	Slight	Severe	Slight	Eastern white pine-- Red pine----- Red spruce----- Sugar maple-----	55 55 35 47	Eastern white pine, red pine, European larch.
AdE----- Adams	5s	Slight	Moderate	Severe	Slight	Eastern white pine-- Red pine----- Red spruce----- Sugar maple-----	55 55 35 47	Eastern white pine, red pine, European larch.
AgA, AgB----- Agawam	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Red pine----- Northern red oak---- Sugar maple-----	70 70 65 ---	Eastern white pine, red pine, white spruce, Norway spruce.
BdB, BdC----- Bernardston	4o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple----- Eastern hemlock-----	55 65 65 65	Eastern white pine, eastern hemlock, balsam fir, white spruce, Scotch pine.
BdD----- Bernardston	4r	Slight	Moderate	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple----- Eastern hemlock-----	55 65 65 65	Eastern white pine, eastern hemlock, balsam fir, white spruce, Scotch pine.
BeB, BeC----- Bernardston	4o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- Sugar maple----- Eastern hemlock-----	55 65 65 65	Eastern white pine, eastern hemlock, balsam fir, white spruce, Scotch pine.
BeD, BeE----- Bernardston	4r	Slight	Moderate	Slight	Slight	Northern red oak---- Eastern white pine--	55 65	Eastern white pine, eastern hemlock.
CaB*, CaC*: Cardigan-----	3o	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple----- Eastern white pine--	70 65 75	Eastern white pine, red pine, European larch.
Kearsarge-----	5d	Slight	Slight	Severe	Moderate	Northern red oak---- Eastern white pine-- Sugar maple-----	55 70 60	Eastern white pine, European larch.
CaD*: Cardigan-----	3r	Moderate	Moderate	Slight	Slight	Northern red oak---- Sugar maple----- Eastern white pine--	70 65 75	Eastern white pine, red pine, European larch.
Kearsarge-----	5d	Slight	Moderate	Severe	Moderate	Northern red oak---- Eastern white pine-- Sugar maple-----	55 70 60	Eastern white pine, European larch.
CbC*: Cardigan-----	3o	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple----- Eastern white pine--	70 65 75	Eastern white pine, red pine, European larch.
Kearsarge-----	5d	Slight	Slight	Severe	Moderate	Northern red oak---- Eastern white pine-- Sugar maple-----	55 70 60	Eastern white pine, European larch.
Rock outcrop.								

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
CbD*: Cardigan-----	3r	Moderate	Moderate	Slight	Slight	Northern red oak---- Sugar maple----- Eastern white pine--	70 65 75	Eastern white pine, red pine, European larch.
Kearsarge-----	5d	Slight	Moderate	Severe	Moderate	Northern red oak---- Eastern white pine-- Sugar maple-----	55 70 60	Eastern white pine, European larch.
Rock outcrop. Ch----- Chocorua	5w	Slight	Severe	Severe	Severe	Black spruce----- Tamarack-----	--- ---	
CoA, CoB, CoC----- Colton	4s	Slight	Slight	Severe	Slight	Eastern white pine-- Red pine----- Red spruce----- Sugar maple----- White spruce-----	62 52 39 61 52	Eastern white pine, red pine.
CoE----- Colton	4s	Slight	Moderate	Severe	Slight	Eastern white pine-- Red pine----- Red spruce----- Sugar maple----- White spruce-----	62 52 39 61 52	Eastern white pine, red pine.
CyA----- Croghan	4s	Slight	Slight	Moderate	Slight	Eastern white pine-- Red pine----- Sugar maple-----	65 65 55	Eastern white pine, red pine, European larch.
DtB, DtC----- Dutchess	4o	Slight	Slight	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine.
DtD----- Dutchess	4r	Slight	Moderate	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine.
DuC----- Dutchess	4x	Slight	Moderate	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine.
DuD----- Dutchess	4x	Moderate	Moderate	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine.
DuE----- Dutchess	4x	Moderate	Severe	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine.
Gw----- Greenwood	5w	Slight	Severe	Severe	Severe	Balsam fir----- Black spruce----- Tamarack----- Red maple-----	39 --- --- ---	
Ha, Hb----- Hadley	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Sugar maple----- Red pine-----	70 63 70	Eastern white pine, red pine, black walnut, European larch.
HcA, HcB, HcC----- Haven	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Sugar maple----- Red pine-----	75 55 65 75	Eastern white pine, red pine, Norway spruce, European larch.
HeB, HeC----- Hermon	4s	Slight	Slight	Moderate	Slight	Eastern white pine-- White spruce----- Red spruce----- Red pine----- Sugar maple-----	62 50 45 65 55	Eastern white pine, red pine, European larch.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
HeD----- Hermon	4s	Slight	Moderate	Moderate	Slight	Eastern white pine-- White spruce----- Red spruce----- Red pine----- Sugar maple-----	62 50 45 65 55	Eastern white pine, red pine, European larch.
HmB, HmC----- Hermon	4s	Slight	Slight	Moderate	Slight	Eastern white pine-- White spruce----- Red spruce----- Red pine----- Sugar maple-----	62 50 45 65 55	Eastern white pine, red pine, European larch.
HmD----- Hermon	4s	Slight	Moderate	Moderate	Slight	Eastern white pine-- White spruce----- Red spruce----- Red pine----- Sugar maple-----	62 50 45 65 55	Eastern white pine, red pine, European larch.
KeE*: Kearsarge-----	5d	Moderate	Severe	Severe	Moderate	Northern red oak---- Sugar maple-----	55 60	Eastern white pine, larch.
Cardigan-----	3r	Severe	Severe	Slight	Slight	Northern red oak---- Sugar maple----- Eastern white pine--	70 65 75	Eastern white pine, red pine, European larch.
Rock outcrop. Lk----- Limerick	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple-----	65 ---	Eastern white pine, white spruce, northern white-cedar.
LsE*: Lyman-----	4d	Moderate	Severe	Severe	Moderate	Sugar maple----- White spruce----- Balsam fir----- Red spruce-----	50 55 60 40	Eastern white pine, red pine, white spruce, balsam fir.
Monadnock-----	4r	Moderate	Severe	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine-----	60 55 75	Eastern white pine, red pine, white spruce.
Rock outcrop. LuA*: Lyme-----	4w	Slight	Severe	Severe	Severe	Northern red oak---- Eastern white pine-- Red maple----- Red spruce-----	60 70 70 50	Eastern white pine, white spruce, eastern hemlock.
Moosilauke-----	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----- Red spruce----- Yellow birch-----	70 78 65 75	Eastern white pine, white spruce, Norway spruce.
LyA*, LyB*: Lyme-----	4w	Slight	Severe	Severe	Severe	Northern red oak---- Red spruce----- Eastern white pine-- Red maple-----	60 50 70 70	Eastern white pine, white spruce, eastern hemlock.
Moosilauke-----	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----- Red spruce----- Yellow birch-----	70 78 65 75	Eastern white pine, white spruce, Norway spruce.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
MaB, MaC----- Marlow	3o	Slight	Slight	Slight	Slight	Eastern white pine--	66	Eastern white pine, white spruce, balsam fir.
						Balsam fir-----	57	
						Red spruce-----	48	
						Sugar maple-----	59	
						Red pine-----	64	
						Yellow birch-----	63	
						Paper birch-----	65	
						White spruce-----	58	
						White ash-----	61	
MaD----- Marlow	3r	Slight	Moderate	Slight	Slight	Eastern white pine--	66	Eastern white pine, white spruce, balsam fir.
						Balsam fir-----	57	
						Red spruce-----	48	
						Sugar maple-----	59	
						Red pine-----	64	
						Yellow birch-----	63	
						Paper birch-----	65	
						White spruce-----	58	
						White ash-----	61	
MbB, MbC----- Marlow	3o	Slight	Slight	Slight	Slight	Eastern white pine--	66	Eastern white pine, white spruce, balsam fir.
						Balsam fir-----	57	
						Red spruce-----	48	
						Sugar maple-----	59	
						Red pine-----	64	
MbD----- Marlow	3r	Slight	Moderate	Slight	Slight	Eastern white pine--	66	Eastern white pine, white spruce, balsam fir.
						Balsam fir-----	57	
						Red spruce-----	48	
						Sugar maple-----	59	
						Red pine-----	64	
MbE----- Marlow	3r	Moderate	Severe	Slight	Slight	Eastern white pine--	66	Eastern white pine, white spruce, balsam fir.
						Balsam fir-----	57	
						Red spruce-----	48	
						Sugar maple-----	59	
						Red pine-----	64	
McB, McC----- Monadnock	4o	Slight	Slight	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine, white spruce.
						Northern red oak----	55	
						Red pine-----	75	
McD----- Monadnock	4r	Slight	Moderate	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine, white spruce.
						Northern red oak----	55	
						Red pine-----	75	
MfB, MfC----- Monadnock	4o	Slight	Slight	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine, white spruce.
						Northern red oak----	55	
						Red pine-----	75	
MfD----- Monadnock	4r	Slight	Moderate	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine, white spruce.
						Northern red oak----	55	
						Red pine-----	75	
MrC*: Monadnock-----	4o	Slight	Slight	Slight	Slight	Eastern white pine--	60	Eastern white pine, red pine, white spruce.
						Northern red oak----	55	
						Red pine-----	75	
Hermon-----	4s	Slight	Slight	Moderate	Slight	Eastern white pine--	62	Eastern white pine, red pine, European larch.
						White spruce-----	50	
						Red spruce-----	45	
						Red pine-----	65	
						Sugar maple-----	55	

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
MrD*: Monadnock-----	4r	Slight	Moderate	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine-----	60 55 75	Eastern white pine, red pine, white spruce.
Hermon-----	4s	Slight	Moderate	Moderate	Slight	Eastern white pine-- White spruce----- Red spruce----- Red pine----- Sugar maple-----	62 50 45 65 55	Eastern white pine, red pine, European larch.
MrE*: Monadnock-----	4r	Moderate	Severe	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine-----	60 55 75	Eastern white pine, red pine, white spruce.
Hermon-----	4s	Moderate	Severe	Moderate	Slight	Eastern white pine-- White spruce----- Red spruce----- Red pine----- Sugar maple-----	62 50 45 65 55	Eastern white pine, red pine, European larch.
MuD*: Monadnock-----	4x	Slight	Moderate	Slight	Slight	Northern red oak---- Red pine----- Eastern white pine--	55 75 60	Red pine, white spruce, eastern white pine.
Hermon-----	4x	Slight	Moderate	Moderate	Slight	Eastern white pine-- White spruce----- Red spruce----- Red pine----- Sugar maple-----	62 50 45 65 55	Eastern white pine, red pine, European larch.
MvB*, MvC*: Monadnock-----	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine-----	60 55 75	Eastern white pine, red pine, white spruce.
Lyman-----	4d	Slight	Slight	Severe	Moderate	Sugar maple----- White spruce----- Balsam fir----- Red spruce-----	50 55 60 40	Eastern white pine, red pine, white spruce, balsam fir.
MvD*: Monadnock-----	4r	Slight	Moderate	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine-----	60 55 75	Eastern white pine, red pine, white spruce.
Lyman-----	4d	Slight	Moderate	Severe	Moderate	Sugar maple----- White spruce----- Balsam fir----- Red spruce-----	50 55 60 40	Eastern white pine, red pine, white spruce, balsam fir.
MwB*, MwC*: Monadnock-----	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine-----	60 55 75	Eastern white pine, red pine, white spruce.
Lyman-----	4d	Slight	Slight	Severe	Moderate	Sugar maple----- White spruce----- Balsam fir----- Red spruce-----	50 55 60 40	Eastern white pine, red pine, white spruce, balsam fir.
Rock outcrop.								

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
MWD*: Monadnock-----	4r	Slight	Moderate	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine-----	60 55 75	Eastern white pine, red pine, white spruce.
Lyman-----	4d	Slight	Moderate	Severe	Moderate	Sugar maple----- White spruce----- Balsam fir----- Red spruce-----	50 55 60 40	Eastern white pine, red pine, white spruce, balsam fir.
Rock outcrop. Na----- Naumburg	4w	Slight	Moderate	Severe	Moderate	Sugar maple----- Eastern white pine-- Eastern hemlock----- Red maple-----	55 65 60 70	Eastern white pine, Norway spruce, white spruce.
NnA----- Ninigret	3o	Slight	Slight	Slight	Slight	Red pine----- Eastern white pine-- Red maple----- Northern red oak---- Sugar maple-----	71 75 60 65 55	Eastern white pine, white spruce.
Of----- Ondawa	4o	Slight	Slight	Slight	Slight	Eastern white pine-- Northern red oak---- Red pine----- Red spruce----- Sugar maple-----	57 60 65 45 55	Eastern white pine, white spruce, red pine.
Ot----- Ossipee	5w	Slight	Severe	Severe	Severe	Black spruce----- Tamarack-----	--- ---	
PcA, PcB, PcC, PeB, PeC----- Peru	3o	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- Eastern white pine-- Red spruce----- Balsam fir----- White spruce-----	57 70 71 45 55 52	Eastern white pine, red pine, white spruce, European larch.
PeD----- Peru	3r	Slight	Moderate	Slight	Slight	Sugar maple----- Northern red oak---- Eastern white pine-- Red spruce----- Balsam fir----- White spruce-----	57 70 71 45 55 52	Eastern white pine, red pine, white spruce, European larch.
PgA, PlA, PlB----- Pillsbury	4w	Slight	Severe	Severe	Severe	Northern red oak---- Red spruce----- Eastern white pine-- Sugar maple-----	60 50 65 55	Eastern white pine, white spruce.
PtA, PtB, PtC, PvB, PvC----- Pittstown	3o	Slight	Slight	Slight	Slight	Northern red oak---- Sugar maple----- Eastern white pine-- Eastern hemlock----- Red spruce-----	72 66 80 75 50	Eastern white pine, eastern hemlock, balsam fir, white spruce, Scotch pine.
Pw----- Podunk	3o	Slight	Slight	Slight	Slight	Eastern white pine-- Red pine----- Red spruce-----	75 75 45	Eastern white pine, red pine, white spruce.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
QsC*: Quonset-----	5s	Slight	Slight	Severe	Slight	Eastern white pine-- Northern red oak---- Red pine----- Sugar maple-----	61 47 60 52	Eastern white pine, red pine.
Warwick-----	4s	Slight	Slight	Moderate	Slight	Eastern white pine-- Northern red oak---- Sugar maple----- Red pine-----	70 55 59 70	Eastern white pine, red pine.
QsD----- Quonset	5s	Slight	Moderate	Severe	Slight	Eastern white pine-- Northern red oak---- Red pine----- Sugar maple-----	61 47 60 52	Eastern white pine, red pine.
Ra----- Raynham	4w	Slight	Severe	Severe	Severe	Eastern white pine-- White spruce----- Red spruce----- Red maple-----	65 55 45 ---	Eastern white pine, white spruce, northern white-cedar.
Ru----- Rumney	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----- Red spruce-----	57 65 45	Eastern white pine, white spruce, northern white-cedar.
Sa----- Saco	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----- Northern white-cedar	50 50 45	
Sb----- Saco Variant	5w	Slight	Severe	Severe	Severe	Eastern white pine-- Red maple----- Northern white-cedar	50 50 45	Northern white-cedar.
SdA, SdB----- Scio	2o	Slight	Slight	Slight	Slight	Northern red oak---- White ash----- Sugar maple----- Black cherry----- Eastern hemlock----- Eastern white pine--	75 85 70 80 70 85	European larch, eastern white pine, red pine, Norway spruce, white spruce.
SgA, ShA, ShB----- Stissing	4w	Slight	Severe	Severe	Severe	Eastern white pine-- Red spruce-----	65 40	Eastern white pine, white spruce.
SnA, SnB, SoB, SoC----- Sunapee	3o	Slight	Slight	Slight	Slight	Sugar maple----- Northern red oak---- Eastern white pine-- Red spruce----- Balsam fir----- White spruce-----	67 70 71 45 55 55	Eastern white pine, red pine, white spruce, European larch.
Su----- Sunday	5s	Slight	Slight	Severe	Slight	Eastern white pine-- Red maple----- Northern red oak---- Balsam poplar----- Sugar maple-----	55 --- 50 55 48	Eastern white pine, red pine, European larch.
UnB----- Unadilla Variant	2o	Slight	Slight	Slight	Slight	Sugar maple----- Eastern white pine-- Northern red oak---- Black cherry----- White ash-----	70 85 80 80 95	Eastern white pine, Norway spruce, black cherry, European larch.
UnC----- Unadilla Variant	2r	Moderate	Slight	Slight	Slight	Sugar maple----- Eastern white pine-- Northern red oak---- Black cherry----- White ash-----	70 85 80 80 95	Eastern white pine, Norway spruce, black cherry, European larch.

See footnote at end of table.

TABLE 7.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Wind-throw hazard	Common trees	Site index	
UnE----- Unadilla Variant	2r	Severe	Moderate	Slight	Slight	Sugar maple----- Eastern white pine-- Northern red oak---- Black cherry----- White ash-----	70 85 80 80 95	Eastern white pine, Norway spruce, black cherry, European larch.
WaB*: Warwick-----	4s	Slight	Slight	Moderate	Slight	Eastern white pine-- Northern red oak---- Sugar maple----- Red pine-----	70 55 59 70	Eastern white pine, red pine.
Quonset-----	5s	Slight	Slight	Severe	Slight	Eastern white pine-- Northern red oak---- Red pine----- Sugar maple-----	61 47 60 52	Eastern white pine, red pine.
WdA, WdB, WdC----- Windsor	5s	Slight	Slight	Severe	Slight	Eastern white pine-- Northern red oak---- Red pine----- Sugar maple-----	57 52 61 55	Eastern white pine, red pine.
WdE----- Windsor	5s	Slight	Moderate	Severe	Slight	Eastern white pine-- Northern red oak---- Red pine----- Sugar maple-----	57 52 61 55	Eastern white pine, red pine.
Wn----- Winooski	3o	Slight	Slight	Slight	Slight	Northern red oak---- Eastern white pine-- White spruce----- Sugar maple-----	70 75 70 65	Eastern white pine, red pine, European larch.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
AdA----- Adams	Slight-----	Slight-----	Slight-----	Slight-----	Severe: droughty.
AdB----- Adams	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: droughty.
AdC----- Adams	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Severe: droughty.
AdE----- Adams	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, droughty.
AgA----- Agawam	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
AgB----- Agawam	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
BdB----- Bernardston	Moderate: slope, percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Slight-----	Moderate: wetness.
BdC----- Bernardston	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope, wetness.
BdD----- Bernardston	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
BeB----- Bernardston	Moderate: large stones, percs slowly.	Moderate: large stones, percs slowly.	Severe: large stones, small stones.	Slight-----	Moderate: large stones, wetness.
BeC----- Bernardston	Moderate: large stones, percs slowly.	Moderate: large stones, percs slowly.	Severe: large stones, slope, small stones.	Slight-----	Moderate: large stones, wetness, slope.
BeD----- Bernardston	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: slope.	Severe: slope.
BeE----- Bernardston	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
Bp* Borochemists					
CaB*; Cardigan-----	Slight-----	Slight-----	Moderate: slope, depth to rock.	Severe: erodes easily.	Moderate: thin layer.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: erodes easily.	Severe: thin layer.
CaC*; Cardigan-----	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope, thin layer.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
CaC*: Kearsarge-----	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.	Severe: thin layer.
CaD*: Cardigan-----	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.	Severe: slope.
Kearsarge-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.	Severe: slope, thin layer.
CbC*: Cardigan-----	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Slight-----	Moderate: small stones, large stones, slope.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones.	Slight-----	Severe: thin layer.
Rock outcrop.					
CbD*: Cardigan-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Kearsarge-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Moderate: slope.	Severe: slope, thin layer.
Rock outcrop.					
Ch----- Chocorua	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
CoA----- Colton	Slight-----	Slight-----	Moderate: small stones.	Slight-----	Severe: droughty.
CoB----- Colton	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Severe: droughty.
CoC----- Colton	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Severe: droughty.
CoE----- Colton	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
CyA----- Croghan	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Severe: droughty.
DtB----- Dutchess	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
DtC----- Dutchess	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
DtD----- Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DuC----- Dutchess	Severe: large stones.	Moderate: slope, large stones.	Severe: slope, large stones.	Severe: large stones.	Severe: large stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
DuD----- Dutchess	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: large stones.	Severe: slope, large stones.
DuE----- Dutchess	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.
Gw----- Greenwood	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
Ha----- Hadley	Severe: flooding.	Moderate: flooding.	Severe: flooding	Slight-----	Severe: flooding.
Hb----- Hadley	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
HcA----- Haven	Slight-----	Slight-----	Moderate: small stones.	Slight-----	Slight.
HcB----- Haven	Slight-----	Slight-----	Moderate: slope, small stones.	Moderate: erodes easily.	Slight.
HcC----- Haven	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.	Moderate: slope.
HeB----- Hermon	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Moderate: droughty.
HeC----- Hermon	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope, droughty.
HeD----- Hermon	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
HmB----- Hermon	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight-----	Moderate: droughty.
HmC----- Hermon	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight-----	Moderate: slope, droughty.
HmD----- Hermon	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
KeE*: Kearsarge-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.	Severe: slope, thin layer.
Cardigan-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Rock outcrop.					
Lk----- Limerick	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: flooding, wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
LsE*: Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: slope.	Severe: slope, thin layer, droughty.
Monadnock-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.	Severe: slope.
Rock outcrop.					
LuA*: Lyme-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
Moosilauke-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
LyA*, LyB*: Lyme-----	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
Moosilauke-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
MaB----- Marlow	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones, percs slowly.	Slight-----	Slight.
MaC----- Marlow	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
MaD----- Marlow	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MbB----- Marlow	Moderate: large stones.	Moderate: large stones.	Severe: large stones.	Slight-----	Moderate: large stones.
MbC----- Marlow	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight-----	Moderate: large stones, slope.
MbD----- Marlow	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.	Severe: slope.
MbE----- Marlow	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
McB----- Monadnock	Slight-----	Slight-----	Moderate: slope, small stones.	Slight-----	Slight.
McC----- Monadnock	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope.
McD----- Monadnock	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.	Severe: slope.
MfB----- Monadnock	Moderate: large stones.	Moderate: large stones.	Severe: small stones.	Slight-----	Moderate: large stones.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MfC----- Monadnock	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Slight-----	Moderate: large stones, slope.
MfD----- Monadnock	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
MrC*: Monadnock-----	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight-----	Moderate: large stones, slope.
Hermon-----	Moderate: slope, large stones.	Moderate: slope.	Severe: slope, large stones, small stones.	Slight-----	Moderate: small stones, large stones, droughty.
MrD*: Monadnock-----	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.	Severe: slope.
Hermon-----	Severe: slope.	Severe: slope.	Severe: slope, large stones, small stones.	Moderate: slope.	Moderate: small stones, large stones, droughty.
MrE*: Monadnock-----	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.	Severe: slope.
Hermon-----	Severe: slope.	Severe: slope.	Severe: slope, large stones, small stones.	Severe: slope.	Moderate: small stones, large stones, droughty.
MuD*: Monadnock-----	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.	Severe: slope.
Hermon-----	Severe: slope.	Severe: slope.	Severe: slope, large stones, small stones.	Severe: slope.	Moderate: small stones, large stones, droughty.
MvB*: Monadnock-----	Moderate: large stones.	Moderate: large stones.	Severe: small stones.	Slight-----	Moderate: large stones.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: large stones, depth to rock.	Slight-----	Severe: thin layer, droughty.
MvC*: Monadnock-----	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Slight-----	Moderate: large stones, slope.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, large stones, depth to rock.	Slight-----	Severe: thin layer, droughty.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
MvD*: Monadnock-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, large stones, depth to rock.	Moderate: slope.	Severe: slope, thin layer, droughty.
MwB*: Monadnock-----	Moderate: large stones.	Moderate: large stones.	Severe: small stones.	Slight-----	Moderate: large stones.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: large stones, depth to rock.	Slight-----	Severe: thin layer, droughty.
Rock outcrop.					
MwC*: Monadnock-----	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, small stones.	Slight-----	Moderate: large stones, slope.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, large stones, depth to rock.	Slight-----	Severe: thin layer, droughty.
Rock outcrop.					
MwD*: Monadnock-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.	Severe: slope.
Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, large stones, depth to rock.	Moderate: slope.	Severe: slope, thin layer, droughty.
Rock outcrop.					
Na----- Naumburg	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
NnA----- Ninigret	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: wetness.	Moderate: wetness.
Of----- Ondawa	Severe: flooding.	Slight-----	Moderate: flooding.	Slight-----	Moderate: flooding.
Ot----- Ossipee	Severe: ponding, excess humus.	Severe: ponding, excess humus.	Severe: excess humus, ponding.	Severe: ponding, excess humus.	Severe: ponding, excess humus.
PcA----- Peru	Moderate: wetness.	Moderate: wetness.	Moderate: small stones.	Moderate: wetness.	Moderate: wetness.
PcB----- Peru	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Moderate: wetness.	Moderate: wetness.
PcC----- Peru	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.	Moderate: wetness, slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
PeB----- Peru	Moderate: large stones, wetness.	Moderate: wetness, large stones.	Severe: large stones.	Moderate: wetness.	Moderate: large stones, wetness.
PeC----- Peru	Moderate: slope, large stones, wetness.	Moderate: slope, wetness, large stones.	Severe: large stones, slope.	Moderate: wetness.	Severe: large stones, wetness, slope.
PeD----- Peru	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: wetness, slope.	Severe: slope.
PgA----- Pillsbury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
PlA, PlB----- Pillsbury	Severe: wetness.	Severe: wetness.	Severe: small stones, wetness.	Severe: wetness.	Severe: wetness.
Pr*, Pits					
PtA----- Pittstown	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, small stones.	Moderate: wetness.	Slight.
PtB----- Pittstown	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness, small stones.	Moderate: wetness.	Slight.
PtC----- Pittstown	Moderate: slope, wetness.	Moderate: slope, wetness.	Severe: slope.	Moderate: wetness.	Moderate: slope.
PvB----- Pittstown	Moderate: large stones, wetness.	Moderate: large stones, wetness.	Severe: large stones, small stones.	Moderate: wetness.	Moderate: large stones.
PvC----- Pittstown	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope, large stones, small stones.	Moderate: wetness.	Moderate: slope, large stones.
Pw----- Podunk	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.
QsC*: Quonset-----	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Slight-----	Severe: small stones, droughty.
Warwick-----	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Moderate: small stones.	Moderate: slope, small stones.
QsD----- Quonset	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.	Severe: small stones, droughty, slope.
Ra----- Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, erodes easily.	Severe: wetness.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ro*. Rock outcrop					
Ru----- Rumney	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.	Severe: flooding, wetness.
Sa----- Saco	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: flooding, wetness.
Sb----- Saco Variant	Severe: flooding, wetness, excess humus.	Severe: wetness, excess humus.	Severe: excess humus, wetness, flooding.	Severe: wetness, excess humus.	Severe: wetness, flooding.
SdA----- Scio	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness.
SdB----- Scio	Moderate: wetness.	Moderate: wetness.	Moderate: slope, wetness.	Moderate: erodes easily, wetness.	Moderate: wetness.
SgA----- Stissing	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
ShA, ShB----- Stissing	Severe: wetness.	Severe: wetness.	Severe: wetness, small stones.	Severe: wetness.	Severe: wetness.
SnA----- Sunapee	Moderate: wetness.	Moderate: wetness.	Moderate: small stones, wetness.	Moderate: wetness.	Moderate: wetness.
SnB----- Sunapee	Moderate: wetness.	Moderate: wetness.	Moderate: slope, small stones.	Moderate: wetness.	Moderate: wetness.
SoB----- Sunapee	Moderate: large stones, wetness.	Moderate: wetness, large stones.	Severe: small stones.	Moderate: wetness.	Moderate: small stones, large stones, wetness.
SoC----- Sunapee	Moderate: slope, large stones.	Moderate: slope, wetness.	Severe: slope, small stones.	Moderate: wetness.	Moderate: small stones, large stones, wetness.
Su----- Sunday	Severe: flooding.	Moderate: flooding.	Severe: flooding.	Moderate: flooding.	Severe: droughty, flooding.
Ub*. Udorthents					
UnB----- Unadilla Variant	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, percs slowly.	Slight-----	Slight.
UnC----- Unadilla Variant	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight-----	Moderate: slope.
UnE----- Unadilla Variant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 8.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails	Golf fairways
Ur*. Urban land					
WaB*: Warwick-----	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Moderate: small stones.	Moderate: small stones.
Quonset-----	Severe: small stones.	Severe: small stones.	Severe: small stones.	Slight-----	Severe: small stones, droughty.
WdA----- Windsor	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
WdB----- Windsor	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
WdC----- Windsor	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight-----	Moderate: slope, droughty.
WdE----- Windsor	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Wn----- Winooski	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Slight-----	Severe: flooding.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 9.--WILDLIFE HABITAT

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
AdA, AdB, AdC----- Adams	Poor	Fair	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
AdE----- Adams	Very poor.	Fair	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
AgA----- Agawam	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
AgB----- Agawam	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
BdB----- Bernardston	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
BdC----- Bernardston	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
BdD----- Bernardston	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
BeB----- Bernardston	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.	---
BeC, BeD, BeE----- Bernardston	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
Bp*. Borohemists												
CaB*, CaC*: Cardigan-----	Fair	Fair	Good	Good	Good	---	Poor	Very poor.	Fair	Good	Very poor.	---
Kearsarge-----	Poor	Poor	Fair	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
CaD*: Cardigan-----	Poor	Poor	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Kearsarge-----	Poor	Poor	Fair	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
CbC*: Cardigan-----	Poor	Poor	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Kearsarge-----	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Rock outcrop.												
CbD*: Cardigan-----	Poor	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
Kearsarge-----	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
CbD*: Rock outcrop.												
Ch----- Chocorua	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	---	Good	Good	Very poor.	Very poor.	Good	---
CoA, CoB, CoC----- Colton	Poor	Fair	Fair	Poor	Poor	---	Very poor.	Very poor.	Fair	Poor	Very poor.	---
CoE----- Colton	Very poor.	Fair	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
CyA----- Croghan	Poor	Fair	Fair	Fair	Fair	---	Poor	Poor	Fair	Fair	Poor	---
DtB----- Dutchess	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
DtC----- Dutchess	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
DtD----- Dutchess	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
DuC----- Dutchess	Very poor.	Poor	Very poor.	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
DuD----- Dutchess	Very poor.	Poor	Very poor.	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
DuE----- Dutchess	Very poor.	Poor	Very poor.	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
GW----- Greenwood	Very poor.	Poor	Poor	Poor	Poor	---	Good	Good	Poor	Poor	Good	---
Ha, Hb----- Hadley	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
HeA----- Haven	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
HeB----- Haven	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
HeC----- Haven	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
HeB, HeC----- Hermon	Fair	Fair	Good	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
HeD----- Hermon	Poor	Fair	Good	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
HmB, HmC----- Hermon	Fair	Fair	Good	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
HmD----- Hermon	Poor	Fair	Good	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
KeE*: Kearsarge-----	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Cardigan-----	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
KeE*: Rock outcrop.												
Lk----- Limerick	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
LsE*: Lyman-----	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Monadnock----- Rock outcrop.	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
LuA*: Lyme-----	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
Moosilauke-----	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
LyA*: Lyme-----	Very poor.	Poor	Fair	Fair	Fair	---	Good	Good	Poor	Fair	Good	---
Moosilauke-----	Very poor.	Poor	Fair	Fair	Fair	---	Good	Good	Poor	Fair	Good	---
LyB*: Lyme-----	Very poor.	Poor	Fair	Fair	Fair	---	Poor	Very poor.	Poor	Fair	Very poor.	---
Moosilauke-----	Very poor.	Poor	Fair	Fair	Fair	---	Fair	Very poor.	Poor	Fair	Very poor.	---
MaB----- Marlow	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
MaC----- Marlow	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
MaD----- Marlow	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
MbB----- Marlow	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.	---
MbC, MbD----- Marlow	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
MbE----- Marlow	Very poor.	Very poor.	Good	Good	Good	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
McB----- Monadnock	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
McC----- Monadnock	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
McD----- Monadnock	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
MfB----- Monadnock	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.	---
MfC, MfD----- Monadnock	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
MrC*, MrD*, MrE*: Monadnock-----	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
Hermon-----	Very poor.	Poor	Good	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
MuD*: Monadnock-----	Very poor.	Poor	Poor	Very poor.	Very poor.	---	Very poor.	Very poor.	Poor	Very poor.	Very poor.	---
Hermon-----	Very poor.	Very poor.	Good	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
MvB*: Monadnock-----	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.	---
Lyman-----	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
MvC*, MvD*: Monadnock-----	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
Lyman-----	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
MwB*: Monadnock-----	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.	---
Lyman-----	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Rock outcrop.												
MwC*, MwD*: Monadnock-----	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
Lyman-----	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Rock outcrop.												
Na----- Naumburg	Poor	Fair	Fair	Fair	Fair	---	Good	Good	Fair	Fair	Good	---
NnA----- Ninigret	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
Of----- Ondawa	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
Ot----- Ossipee	Very poor.	Very poor.	Very poor.	Very poor.	Very poor.	---	Good	Good	Very poor.	Very poor.	Good	---
PcA----- Peru	Fair	Good	Good	Good	Good	---	Fair	Fair	Good	Good	Fair	---
PcB----- Peru	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
PcC----- Peru	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
PeB----- Peru	Very poor.	Poor	Good	Good	Good	---	Poor	Very poor.	Poor	Good	Very poor.	---
PeC, PeD----- Peru	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
PgA----- Pillsbury	Poor	Poor	Fair	Fair	Fair	---	Good	Fair	Poor	Fair	Fair	---
PlA----- Pillsbury	Very poor.	Poor	Fair	Fair	Fair	---	Good	Good	Poor	Fair	Good	---
PlB----- Pillsbury	Very poor.	Poor	Fair	Fair	Fair	---	Poor	Very poor.	Poor	Fair	Very poor.	---
Pr*. Pits												
PtA----- Pittstown	Fair	Good	Good	Fair	Fair	---	Poor	Poor	Good	Fair	Poor	---
PtB----- Pittstown	Fair	Good	Good	Fair	Fair	---	Poor	Very poor.	Good	Fair	Very poor.	---
PtC----- Pittstown	Fair	Good	Good	Fair	Fair	---	Very poor.	Very poor.	Good	Fair	Very poor.	---
PvB----- Pittstown	Very poor.	Poor	Good	Fair	Fair	---	Poor	Very poor.	Poor	Fair	Very poor.	---
PvC----- Pittstown	Very poor.	Poor	Good	Fair	Fair	---	Very poor.	Very poor.	Poor	Fair	Very poor.	---
PW----- Podunk	Poor	Fair	Fair	Good	Good	---	Poor	Poor	Fair	Good	Poor	---
QsC*: Quonset-----	Poor	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Warwick-----	Fair	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
QsD----- Quonset	Very poor.	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Ra----- Raynham	Fair	Fair	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair	---
Ro*. Rock outcrop												
Ru----- Rumney	Poor	Fair	Fair	Fair	Fair	---	Good	Fair	Fair	Fair	Fair	---
Sa----- Saco	Very poor.	Poor	Poor	Poor	Poor	---	Good	Good	Poor	Poor	Good	---
Sb----- Saco Variant	Very poor.	Poor	Poor	Poor	Poor	---	Good	Good	Poor	Poor	Good	---
SdA----- Scio	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
SdB----- Scio	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---

See footnote at end of table.

TABLE 9.--WILDLIFE HABITAT--Continued

Soil name and map symbol	Potential for habitat elements								Potential as habitat for--			
	Grain and seed crops	Grasses and legumes	Wild herba- ceous plants	Hard- wood trees	Conif- erous plants	Shrubs	Wetland plants	Shallow water areas	Open- land wild- life	Wood- land wild- life	Wetland wild- life	Range- land wild- life
SgA----- Stissing	Poor	Fair	Fair	Fair	Fair	---	Good	Poor	Fair	Fair	Fair	---
ShA----- Stissing	Very poor.	Poor	Fair	Fair	Fair	---	Good	Fair	Poor	Fair	Fair	---
ShB----- Stissing	Very poor.	Poor.	Fair	Fair	Fair	---	Poor	Very poor.	Poor	Fair	Very poor.	---
SnA----- Sunapee	Good	Good	Good	Good	Good	---	Poor	Poor	Good	Good	Poor	---
SnB----- Sunapee	Fair	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
SoB----- Sunapee	Very poor.	Poor	Good	Good	Good	---	Poor	Poor	Poor	Good	Poor	---
SoC----- Sunapee	Very poor.	Poor	Good	Good	Good	---	Very poor.	Very poor.	Poor	Good	Very poor.	---
Su----- Sunday	Poor	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Ub*. Udorthents												
UnB----- Unadilla Variant	Good	Good	Good	Good	Good	---	Poor	Very poor.	Good	Good	Very poor.	---
UnC----- Unadilla Variant	Fair	Good	Good	Good	Good	---	Very poor.	Very poor.	Good	Good	Very poor.	---
UnE----- Unadilla Variant	Poor	Fair	Good	Good	Good	---	Very poor.	Very poor.	Fair	Good	Very poor.	---
Ur*. Urban land												
WaB*: Warwick-----	Fair	Fair	Fair	Fair	Fair	---	Very poor.	Very poor.	Fair	Fair	Very poor.	---
Quonset-----	Poor	Poor	Poor	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
WdA, WdB, WdC----- Windsor	Poor	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
WdE----- Windsor	Very poor.	Poor	Fair	Poor	Poor	---	Very poor.	Very poor.	Poor	Poor	Very poor.	---
Wn----- Winooski	Poor	Fair	Fair	Good	Good	---	Poor	Poor	Fair	Good	Poor	---

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 10.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
AdA----- Adams	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Severe: droughty.
AdB----- Adams	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: droughty.
AdC----- Adams	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
AdE----- Adams	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, droughty.
AgA----- Agawam	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Slight.
AgB----- Agawam	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
BdB----- Bernardston	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness.
BdC----- Bernardston	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope, wetness.
BdD----- Bernardston	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
BeB----- Bernardston	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: large stones, wetness.
BeC----- Bernardston	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, wetness, slope.
BeD, BeE----- Bernardston	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Bp*. Borochemists						
CaB*: Cardigan-----	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: thin layer.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer.
CaC*: Cardigan-----	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: slope, thin layer.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
CaD*: Cardigan-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Kearsarge-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
CbC*: Cardigan-----	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: small stones, large stones, slope.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer.
Rock outcrop.						
CbD*: Cardigan-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Kearsarge-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Rock outcrop.						
Ch----- Chocorua	Severe: cutbanks cave, excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: low strength, ponding, frost action.	Severe: ponding, excess humus.
CoA----- Colton	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Severe: droughty.
CoB----- Colton	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: droughty.
CoC----- Colton	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: droughty.
CoE----- Colton	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
CyA----- Croghan	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Severe: droughty.
DtB----- Dutchess	Slight-----	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Slight.
DtC----- Dutchess	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
DtD----- Dutchess	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
DuC----- Dutchess	Severe: large stones.	Severe: large stones.	Severe: large stones.	Severe: slope, large stones.	Moderate: slope, large stones, frost action.	Severe: large stones.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
DuD, DuE----- Dutchess	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Severe: slope, large stones.
GW----- Greenwood	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, frost action.	Severe: ponding, excess humus.
Ha----- Hadley	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
Hb----- Hadley	Moderate: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding, frost action.	Moderate: flooding.
HcA----- Haven	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Moderate: frost action.	Slight.
HcB----- Haven	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Moderate: frost action.	Slight.
HcC----- Haven	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
HeB----- Hermon	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Moderate: droughty.
HeC----- Hermon	Severe: cutbanks cave.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Moderate: slope, droughty.
HeD----- Hermon	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
HmB----- Hermon	Severe: cutbanks cave.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Moderate: droughty.
HmC----- Hermon	Severe: cutbanks cave.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Moderate: slope, droughty.
HmD----- Hermon	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
KeE*: Kearsarge-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, thin layer.
Cardigan-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
Lk----- Limerick	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: flooding, wetness.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
LsE*: Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer, droughty.
Monadnock-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop.						
LuA*, LyA*, LyB*: Lyme-----	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Moosilauke-----	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
MaB----- Marlow	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Slight.
MaC----- Marlow	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: slope.
MaD----- Marlow	Poor: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MbB----- Marlow	Moderate: dense layer, wetness.	Moderate: wetness.	Moderate: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: large stones.
MbC----- Marlow	Moderate: dense layer, wetness, slope.	Moderate: wetness, slope.	Moderate: wetness, slope.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: large stones, slope.
MbD, MbE----- Marlow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
McB----- Monadnock	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Slight.
McC----- Monadnock	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
McD----- Monadnock	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MfB----- Monadnock	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: large stones.
MfC----- Monadnock	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
MfD----- Monadnock	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MrC*: Monadnock-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
Hermon-----	Severe: cutbanks cave.	Moderate: large stones, slope.	Moderate: large stones, slope.	Severe: slope.	Moderate: slope, large stones.	Moderate: small stones, large stones, droughty.
MrD*, MrE*, MuD*: Monadnock-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Hermon-----	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
MvB*: Monadnock-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: large stones.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer, droughty.
MvC*: Monadnock-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer, droughty.
MvD*: Monadnock-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer, droughty.
MwB*: Monadnock-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: large stones.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: thin layer, droughty.
Rock outcrop.						
MwC*: Monadnock-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: large stones, slope.
Lyman-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: thin layer, droughty.
Rock outcrop.						

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
MWD*: Monadnock-----	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, thin layer, droughty.
Rock outcrop.						
Na----- Naumburg	Severe: cutbanks cave, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.
NnA----- Ninigret	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness.	Moderate: wetness.
Of----- Ondawa	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
Ot----- Ossipee	Severe: excess humus, ponding.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: ponding, low strength.	Severe: low strength, ponding, frost action.	Severe: ponding, excess humus.
PcA----- Peru	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
PcB----- Peru	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
PcC----- Peru	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Moderate: wetness, slope.
PeB----- Peru	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: large stones, wetness.
PeC----- Peru	Severe: wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Severe: frost action.	Severe: wetness, slope.
PeD----- Peru	Severe: wetness, slope.	Severe: slope.	Severe: wetness, slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
PgA, PlA, PlB----- Pillsbury	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.
Pr*. Pits						
PtA----- Pittstown	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: frost action, wetness, low strength.	Slight.
PtB----- Pittstown	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action, wetness, low strength.	Slight.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
PtC----- Pittstown	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: slope.
PvB----- Pittstown	Severe: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: slope, wetness.	Moderate: frost action.	Moderate: large stones.
PvC----- Pittstown	Severe: wetness.	Moderate: slope, wetness.	Severe: wetness.	Severe: slope.	Moderate: slope, frost action, wetness.	Moderate: slope, large stones.
Pw----- Podunk	Severe: cutbanks cave, wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
QsC*: Quonset-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Severe: small stones, droughty.
Warwick-----	Severe: small stones, cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, small stones.
QsD----- Quonset	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
Ra----- Raynham	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: frost action, wetness.	Severe: wetness.
Ro*. Rock outcrop						
Ru----- Rumney	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: flooding, wetness.
Sa----- Saco	Severe: wetness, cutbanks cave.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, frost action.	Severe: flooding, wetness.
Sb----- Saco Variant	Severe: cutbanks cave, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
SdA----- Scio	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Severe: frost action.	Moderate: wetness.
SdB----- Scio	Severe: wetness, cutbanks cave.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Severe: frost action.	Moderate: wetness.
SgA, ShA, ShB----- Stissing	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness.	Severe: wetness, frost action.	Severe: wetness, frost action.	Severe: wetness.
SnA----- Sunapee	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: wetness, frost action.	Moderate: wetness.

See footnote at end of table.

TABLE 10.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
SnB----- Sunapee	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: wetness.
SoB----- Sunapee	Severe: cutbanks cave, wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness, slope.	Moderate: wetness, frost action.	Moderate: small stones, large stones, wetness.
SoC----- Sunapee	Severe: cutbanks cave, wetness.	Moderate: wetness, slope.	Severe: wetness.	Severe: slope.	Moderate: wetness, slope, frost action.	Moderate: small stones, large stones, wetness.
Su----- Sunday	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: droughty, flooding.
Ub*. Udorthents						
UnB----- Unadilla Variant	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Severe: frost action.	Slight.
UnC----- Unadilla Variant	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: frost action.	Moderate: slope.
UnE----- Unadilla Variant	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope, frost action.	Severe: slope.
Ur*. Urban land						
WaB*: Warwick-----	Severe: small stones, cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: small stones.
Quonset-----	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Severe: small stones, droughty.
WdA----- Windsor	Severe: cutbanks cave.	Slight-----	Slight-----	Slight-----	Slight-----	Moderate: droughty.
WdB----- Windsor	Severe: cutbanks cave.	Slight-----	Slight-----	Moderate: slope.	Slight-----	Moderate: droughty.
WdC----- Windsor	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope, droughty.
WdE----- Windsor	Severe: slope, cutbanks cave.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Wn----- Winooski	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
AdA, AdB----- Adams	Severe: poor filter.	Severe: seepage.
AdC----- Adams	Severe: poor filter.	Severe: slope, seepage.
AdE----- Adams	Severe: poor filter, slope.	Severe: slope, seepage.
AgA, AgB----- Agawam	Severe: poor filter.	Severe: seepage.
BdB----- Bernardston	Severe: percs slowly.	Moderate: slope, wetness.
BdC----- Bernardston	Severe: percs slowly.	Severe: slope.
BdD----- Bernardston	Severe: percs slowly, slope.	Severe: slope.
BeB----- Bernardston	Severe: percs slowly.	Moderate: slope, wetness.
BeC----- Bernardston	Severe: percs slowly.	Severe: slope.
BeD, BeE----- Bernardston	Severe: percs slowly, slope.	Severe: slope.
Bp*. Borohemists		
CaB*: Cardigan-----	Severe: depth to rock.	Severe: depth to rock.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock.
CaC*: Cardigan-----	Severe: depth to rock.	Severe: depth to rock, slope.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock, slope.
CaD*: Cardigan-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Kearsarge-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
CbC*: Cardigan-----	Severe: depth to rock.	Severe: depth to rock, slope.
Kearsarge-----	Severe: depth to rock.	Severe: depth to rock, slope.
Rock outcrop.		
CbD*: Cardigan-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Kearsarge-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Rock outcrop.		
Ch----- Chocorua	Severe: wetness, ponding, poor filter.	Severe: seepage, ponding, excess humus.
CoA, CoB----- Colton	Severe: poor filter.	Severe: seepage.
CoC----- Colton	Severe: poor filter.	Severe: slope, seepage.
CoE----- Colton	Severe: poor filter, slope.	Severe: slope, seepage.
CyA----- Croghan	Severe: wetness, poor filter.	Severe: seepage, wetness.
DtB----- Dutchess	Slight-----	Moderate: slope.
DtC----- Dutchess	Moderate: slope.	Severe: slope.
DtD----- Dutchess	Severe: slope.	Severe: slope.
DuC----- Dutchess	Severe: large stones.	Severe: slope.
DuD, DuE----- Dutchess	Severe: slope, large stones.	Severe: slope.
Gw----- Greenwood	Severe: ponding.	Severe: seepage, excess humus, ponding.
Ha, Hb----- Hadley	Severe: flooding.	Severe: flooding, seepage.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
HcA, HcB----- Haven	Severe: poor filter.	Severe: seepage.
HcC----- Haven	Severe: poor filter.	Severe: slope, seepage.
HeB----- Hermon	Severe: poor filter.	Severe: seepage.
HeC----- Hermon	Severe: poor filter.	Severe: seepage, slope.
HeD----- Hermon	Severe: poor filter, slope.	Severe: seepage, slope.
HmB----- Hermon	Severe: poor filter.	Severe: seepage.
HmC----- Hermon	Severe: poor filter.	Severe: seepage, slope.
HmD----- Hermon	Severe: poor filter, slope.	Severe: seepage, slope.
KeE*: Kearsarge-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Cardigan-----	Severe: depth to rock, slope.	Severe: depth to rock, slope.
Rock outcrop.		
Lk----- Limerick	Severe: flooding, wetness.	Severe: flooding, wetness.
LsE*: Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.
Monadnock-----	Severe: slope.	Severe: seepage, slope.
Rock outcrop.		
LuA*, LyA*, LyB*: Lyme-----	Severe: wetness.	Severe: seepage, wetness.
Moosilauke-----	Severe: wetness, poor filter.	Severe: seepage, wetness.
MaB----- Marlow	Severe: wetness, percs slowly.	Moderate: seepage, slope.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
MaC----- Marlow	Severe: wetness, percs slowly.	Severe: slope.
MaD----- Marlow	Severe: wetness, percs slowly, slope.	Severe: slope.
MbB----- Marlow	Severe: wetness, percs slowly.	Moderate: seepage, slope.
MbC----- Marlow	Severe: wetness, percs slowly.	Severe: slope.
MbD, MbE----- Marlow	Severe: wetness, percs slowly, slope.	Severe: slope.
McB----- Monadnock	Slight-----	Severe: seepage.
McC----- Monadnock	Moderate: slope.	Severe: seepage, slope.
McD----- Monadnock	Severe: slope.	Severe: seepage, slope.
MfB----- Monadnock	Slight-----	Severe: seepage.
MfC----- Monadnock	Moderate: slope.	Severe: seepage, slope.
MfD----- Monadnock	Severe: slope.	Severe: seepage, slope.
MrC*: Monadnock-----	Moderate: slope.	Severe: seepage, slope.
Hermon-----	Severe: poor filter.	Severe: seepage, slope.
MrD*, MrE*, MuD*: Monadnock-----	Severe: slope.	Severe: seepage, slope.
Hermon-----	Severe: slope, poor filter.	Severe: seepage, slope.
MvB*: Monadnock-----	Slight-----	Severe: seepage.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
MvB*: Lyman-----	Severe: depth to rock.	Severe: depth to rock, seepage.
MvC*: Monadnock-----	Moderate: slope.	Severe: seepage, slope.
Lyman-----	Severe: depth to rock.	Severe: slope, depth to rock, seepage.
MvD*: Monadnock-----	Severe: slope.	Severe: seepage, slope.
Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.
MwB*: Monadnock-----	Slight-----	Severe: seepage.
Lyman-----	Severe: depth to rock.	Severe: depth to rock, seepage.
Rock outcrop.		
MwC*: Monadnock-----	Moderate: slope.	Severe: seepage, slope.
Lyman-----	Severe: depth to rock.	Severe: slope, depth to rock, seepage.
Rock outcrop.		
MwD*: Monadnock-----	Severe: slope.	Severe: seepage, slope.
Lyman-----	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.
Rock outcrop.		
Na----- Naumburg	Severe: wetness, poor filter.	Severe: seepage, wetness.
NnA----- Ninigret	Severe: wetness, poor filter.	Severe: wetness, seepage.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
Of----- Ondawa	Severe: flooding, poor filter.	Severe: flooding, seepage.
Ot----- Ossipee	Severe: ponding, percs slowly.	Severe: seepage, ponding, excess humus.
PcA----- Peru	Severe: wetness, percs slowly.	Moderate: seepage.
PcB----- Peru	Severe: wetness, percs slowly.	Moderate: seepage, slope.
PcC----- Peru	Severe: wetness, percs slowly.	Severe: slope.
PeB----- Peru	Severe: wetness, percs slowly.	Moderate: seepage, slope.
PeC----- Peru	Severe: wetness, percs slowly.	Severe: slope.
PeD----- Peru	Severe: wetness, percs slowly, slope.	Severe: slope.
PgA, PlA----- Pillsbury	Severe: wetness, percs slowly.	Slight.
PlB----- Pillsbury	Severe: wetness, percs slowly.	Moderate: slope.
Pr*. Pits		
PtA, PtB----- Pittstown	Severe: wetness, percs slowly.	Severe: wetness.
PtC----- Pittstown	Severe: wetness, percs slowly.	Severe: slope, wetness.
PvB----- Pittstown	Severe: percs slowly, wetness.	Severe: wetness.
PvC----- Pittstown	Severe: percs slowly, wetness.	Severe: slope, wetness.
Pw----- Podunk	Severe: flooding, wetness, poor filter.	Severe: flooding, wetness, seepage.

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
QsC*: Quonset-----	Severe: poor filter.	Severe: slope, seepage.
Warwick-----	Severe: poor filter.	Severe: slope, seepage.
QsD----- Quonset	Severe: poor filter, slope.	Severe: slope, seepage.
Ra----- Raynham	Severe: percs slowly, wetness.	Severe: wetness.
Ro*. Rock outcrop		
Ru----- Rumney	Severe: flooding, wetness, poor filter.	Severe: flooding, wetness, seepage.
Sa----- Saco	Severe: flooding, wetness, poor filter.	Severe: flooding, wetness, seepage.
Sb----- Saco Variant	Severe: flooding, wetness, poor filter.	Severe: seepage, flooding, wetness.
SdA, SdB----- Scio	Severe: wetness.	Severe: seepage.
SgA----- Stissing	Severe: wetness, percs slowly.	Moderate: slope.
ShA----- Stissing	Severe: wetness, percs slowly.	Moderate: large stones.
ShB----- Stissing	Severe: wetness, percs slowly.	Moderate: slope, large stones.
SnA, SnB, SoB----- Sunapee	Severe: wetness.	Severe: seepage, wetness.
SoC----- Sunapee	Severe: wetness.	Severe: seepage, wetness, slope.
Su----- Sunday	Severe: flooding, poor filter.	Severe: seepage, flooding.
Ub*. Udorthents		

See footnote at end of table.

TABLE 11.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas
UnB----- Unadilla Variant	Severe: percs slowly.	Moderate: seepage, slope.
UnC----- Unadilla Variant	Severe: percs slowly.	Severe: slope.
UnE----- Unadilla Variant	Severe: percs slowly, slope.	Severe: slope.
Ur*. Urban land		
WaB*: Warwick-----	Severe: poor filter.	Severe: seepage.
Quonset-----	Severe: poor filter.	Severe: seepage.
WdA, WdB----- Windsor	Severe: poor filter.	Severe: seepage.
WdC----- Windsor	Severe: poor filter.	Severe: slope, seepage.
WdE----- Windsor	Severe: slope, poor filter.	Severe: slope, seepage.
Wn----- Winooski	Severe: flooding, wetness.	Severe: flooding, wetness, seepage.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
AdA, AdB, AdC----- Adams	Good-----	Probable-----	Improbable: too sandy.	Poor: too sandy.
AdE----- Adams	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: slope, too sandy.
AgA, AgB----- Agawam	Good-----	Probable-----	Probable-----	Poor: too sandy, area reclaim.
BdB, BdC----- Bernardston	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
BdD----- Bernardston	Fair: low strength, wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BeB, BeC----- Bernardston	Fair: low strength, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
BeD----- Bernardston	Fair: low strength, wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
BeE----- Bernardston	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Bp*. Borohemists				
CaB*: Cardigan-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, small stones.
Kearsarge-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, thin layer.
CaC*: Cardigan-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim, slope.
Kearsarge-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, thin layer.
CaD*: Cardigan-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Kearsarge-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, thin layer, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
CbC*: Cardigan-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Kearsarge-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, thin layer.
Rock outcrop.				
CbD*: Cardigan-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Kearsarge-----	Poor: area reclaim.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Rock outcrop.				
Ch----- Chocorua	Poor: wetness, low strength.	Probable-----	Improbable: too sandy.	Poor: excess humus, wetness.
CoA, CoB, CoC----- Colton	Good-----	Probable-----	Probable-----	Poor: small stones, too sandy.
CoE----- Colton	Poor: slope.	Probable-----	Probable-----	Poor: slope, small stones, too sandy.
CyA----- Croghan	Fair: wetness.	Probable-----	Improbable: too sandy.	Fair: too sandy, small stones.
DtB----- Dutchess	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
DtC----- Dutchess	Good-----	Improbable: excess fines.	Improbable: excess fines.	Fair: slope, small stones.
DtD----- Dutchess	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
DuC----- Dutchess	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
DuD----- Dutchess	Fair: slope, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
DuE----- Dutchess	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, large stones.
GW----- Greenwood	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
Ha, Hb----- Hadley	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.
HcA, HcB, HcC----- Haven	Good-----	Probable-----	Probable-----	Poor: too sandy, area reclaim.
HeB, HeC----- Hermon	Fair: large stones.	Probable-----	Probable-----	Poor: small stones, area reclaim.
HeD----- Hermon	Fair: slope, large stones.	Probable-----	Probable-----	Poor: slope, small stones, area reclaim.
HmB, HmC----- Hermon	Fair: large stones.	Probable-----	Probable-----	Poor: small stones, area reclaim.
HmD----- Hermon	Fair: slope, large stones.	Probable-----	Probable-----	Poor: slope, small stones, area reclaim.
KeE*: Kearsarge-----	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Cardigan----- Rock outcrop.	Poor: area reclaim, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Lk----- Limerick	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
LsE*: Lyman-----	Poor: slope, thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Monadnock----- Rock outcrop.	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: small stones, slope.
LuA*: Lyne-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Moosilauke-----	Poor: wetness.	Probable-----	Probable-----	Poor: too sandy, wetness.
LyA*, LyB*: Lyne-----	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
Moosilauke-----	Poor: wetness.	Probable-----	Probable-----	Poor: too sandy, wetness.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MaB, MaC----- Marlow	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
MaD----- Marlow	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
MbB, MbC----- Marlow	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
MbD----- Marlow	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
MbE----- Marlow	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
McB----- Monadnock	Good-----	Probable-----	Improbable: too sandy.	Fair: small stones.
McC----- Monadnock	Good-----	Probable-----	Improbable: too sandy.	Fair: small stones, slope.
McD----- Monadnock	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: slope.
MfB, MfC----- Monadnock	Good-----	Probable-----	Improbable: too sandy.	Poor: small stones.
MfD----- Monadnock	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: small stones, slope.
MrC*: Monadnock-----	Good-----	Probable-----	Improbable: too sandy.	Poor: small stones.
Hermon-----	Fair: large stones.	Probable-----	Probable-----	Poor: small stones, area reclaim.
MrD*: Monadnock-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: small stones, slope.
Hermon-----	Fair: slope, large stones.	Probable-----	Probable-----	Poor: small stones, area reclaim.
MrE*: Monadnock-----	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: small stones, slope.
Hermon-----	Poor: slope.	Probable-----	Probable-----	Poor: small stones, area reclaim.
MuD*: Monadnock-----	Poor: slope.	Probable-----	Improbable: too sandy.	Poor: large stones, small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
MuD*: Hermon-----	Poor: slope.	Probable-----	Probable-----	Poor: small stones, area reclaim.
MvB*, MvC*: Monadnock-----	Good-----	Probable-----	Improbable: too sandy.	Poor: small stones.
Lyman-----	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: small stones, area reclaim, thin layer.
MvD*: Monadnock-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: small stones, slope.
Lyman-----	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope, small stones, thin layer.
MwB*, MwC*: Monadnock-----	Good-----	Probable-----	Improbable: too sandy.	Poor: small stones.
Lyman-----	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: small stones, area reclaim, thin layer.
Rock outcrop.				
MwD*: Monadnock-----	Fair: slope.	Probable-----	Improbable: too sandy.	Poor: small stones, slope.
Lyman-----	Poor: thin layer, area reclaim.	Improbable: excess fines, thin layer.	Improbable: excess fines, thin layer.	Poor: slope, small stones, thin layer.
Rock outcrop.				
Na----- Naumburg	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: too sandy, wetness.
NnA----- Ninigret	Fair: wetness.	Probable-----	Probable-----	Poor: area reclaim.
Of----- Ondawa	Good-----	Probable-----	Improbable: too sandy.	Fair: thin layer.
Ot----- Ossipee	Poor: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess humus, wetness.
PcA, PcB, PcC, PeB, PeC----- Peru	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PeD----- Peru	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
PgA----- Pillsbury	Poor: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
PlA, PlB----- Pillsbury	Poor: thin layer, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, wetness.
Pr*. Pits				
PtA, PtB, PtC----- Pittstown	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
PvB, PvC----- Pittstown	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Pw----- Podunk	Fair: wetness.	Probable-----	Probable-----	Fair: small stones, thin layer, area reclaim.
QsC*: Quonset-----	Good-----	Probable-----	Probable-----	Poor: too sandy, small stones.
Warwick-----	Good-----	Probable-----	Probable-----	Poor: small stones, thin layer.
QsD----- Quonset	Poor: slope.	Probable-----	Probable-----	Poor: too sandy, small stones, slope.
Ra----- Raynham	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Ro*. Rock outcrop				
Ru----- Rumney	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: wetness, small stones.
Sa----- Saco	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: wetness.
Sb----- Saco Variant	Poor: wetness.	Probable-----	Improbable: too sandy.	Poor: area reclaim, wetness.
SdA, SdB----- Scio	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: area reclaim.
SgA----- Stissing	Poor: wetness, frost action.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, small stones.
ShA, ShB----- Stissing	Poor: wetness, frost action.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness, large stones.
SnA----- Sunapee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.

See footnote at end of table.

TABLE 12.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
SnB----- Sunapee	Fair: wetness, slope.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
SoB, SoC----- Sunapee	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Su----- Sunday	Good-----	Probable-----	Improbable: too sandy.	Fair: too sandy.
Ub*. Udorthents				
UnB----- Unadilla Variant	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
UnC----- Unadilla Variant	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
UnE----- Unadilla Variant	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Ur*. Urban land				
WaB*: Warwick-----	Good-----	Probable-----	Probable-----	Poor: small stones, thin layer.
Quonset-----	Good-----	Probable-----	Probable-----	Poor: too sandy, small stones.
WdA, WdB, WdC----- Windsor	Good-----	Probable-----	Improbable: excess fines.	Poor: too sandy.
WdE----- Windsor	Poor: slope.	Probable-----	Improbable: excess fines.	Poor: slope, too sandy.
Wn----- Winooski	Fair: wetness, low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
AdA, AdB----- Adams	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy-----	Droughty.
AdC, AdE----- Adams	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
AgA, AgB----- Agawam	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy-----	Favorable.
BdB----- Bernardston	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Rooting depth, percs slowly.	Rooting depth, percs slowly.
BdC, BdD----- Bernardston	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly, rooting depth.	Slope, percs slowly, rooting depth.
BeB----- Bernardston	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Large stones, percs slowly, rooting depth.	Large stones, percs slowly, rooting depth.
BeC, BeD, BeE----- Bernardston	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, percs slowly.	Large stones, slope, percs slowly.
Bp*. Borohemists						
CaB*: Cardigan-----	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock, erodes easily.	Erodes easily, depth to rock.
Kearsarge-----	Severe: depth to rock.	Severe: piping.	Severe: no water.	Deep to water	Depth to rock, erodes easily.	Erodes easily, depth to rock.
CaC*, CaD*: Cardigan-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Kearsarge-----	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
CbC*, CbD*: Cardigan-----	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Kearsarge-----	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Rock outcrop.						
Ch----- Chocorua	Severe: seepage.	Severe: seepage, ponding, excess humus.	Severe: cutbanks cave.	Frost action, cutbanks cave, ponding.	Ponding-----	Wetness.
CoA, CoB----- Colton	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, too sandy.	Droughty, large stones.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
CoC, CoE----- Colton	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Slope, droughty, large stones.
CyA----- Croghan	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Droughty.
DtB----- Dutchess	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
DtC, DtD----- Dutchess	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
DuC, DuD, DuE----- Dutchess	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, large stones, erodes easily.	Slope, large stones, erodes easily.
GW----- Greenwood	Severe: seepage.	Severe: excess humus, ponding.	Moderate: slow refill.	Ponding, frost action.	Ponding, soil blowing.	Wetness.
Ha, Hb----- Hadley	Severe: seepage.	Severe: piping.	Moderate: deep to water.	Deep to water	Erodes easily	Erodes easily.
HcA, HcB----- Haven	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Erodes easily, too sandy.	Erodes easily.
HcC----- Haven	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, erodes easily, too sandy.	Slope, erodes easily.
HeB----- Hermon	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, too sandy.	Large stones, droughty.
HeC, HeD----- Hermon	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope, droughty.
HmB----- Hermon	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, too sandy.	Large stones, droughty.
HmC, HmD----- Hermon	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope, droughty.
KeE*: Kearsarge-----	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Cardigan----- Rock outcrop.	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Lk----- Limerick	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, erodes easily.	Wetness, erodes easily.
LsE*: Lyman-----	Severe: slope, seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock, droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
LsE*: Monadnock-----	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
Rock outcrop.						
LuA*, LyA*: Lyme-----	Severe: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action---	Wetness-----	Wetness.
Moosilauke-----	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Frost action, cutbanks cave.	Wetness, too sandy.	Wetness.
LyB*: Lyme-----	Severe: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Frost action, slope.	Wetness-----	Wetness.
Moosilauke-----	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Frost action, slope, cutbanks cave.	Wetness, too sandy.	Wetness.
MaB----- Marlow	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope-----	Erodes easily, rooting depth.	Erodes easily, rooting depth.
MaC, MaD----- Marlow	Severe: slope.	Severe: piping.	Severe: no water.	Slope-----	Slope, erodes easily, rooting depth.	Slope, erodes easily, rooting depth.
MbB----- Marlow	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Slope-----	Erodes easily, rooting depth.	Erodes easily, rooting depth.
MbC, MbD, MbE----- Marlow	Severe: slope.	Severe: piping.	Severe: no water.	Slope-----	Slope, erodes easily, rooting depth.	Slope, erodes easily, rooting depth.
McB----- Monadnock	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy-----	Favorable.
McC, McD----- Monadnock	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
MfB----- Monadnock	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy-----	Favorable.
MfC, MfD----- Monadnock	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
MrC*, MrD*, MrE*: Monadnock-----	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope.
Hermon-----	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, slope, too sandy.	Large stones, slope, droughty.
MuD*: Monadnock-----	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, too sandy.	Large stones, slope.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
MuD*: Hermon-----	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Large stones, slope, too sandy.	Large stones, slope, droughty.
MvB*: Monadnock-----	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy-----	Favorable.
Lyman-----	Severe: seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Depth to rock	Depth to rock, droughty.
MvC*, MvD*: Monadnock-----	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
Lyman-----	Severe: slope, seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock, droughty.
MwB*: Monadnock-----	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy-----	Favorable.
Lyman-----	Severe: seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Depth to rock	Depth to rock, droughty.
Rock outcrop.						
MwC*, MWD*: Monadnock-----	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope.
Lyman-----	Severe: slope, seepage, depth to rock.	Severe: thin layer, piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock, droughty.
Rock outcrop.						
Na----- Naumburg	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Wetness, droughty.
NnA----- Ninigret	Severe: seepage.	Severe: seepage, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Favorable.
Of----- Ondawa	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy, erodes easily.	Erodes easily.
Ot----- Ossipee	Slight-----	Severe: piping, excess humus, ponding.	Severe: slow refill.	Ponding, frost action.	Ponding-----	Wetness.
PcA----- Peru	Moderate: seepage.	Severe: piping.	Severe: no water.	Percolates slowly, frost action.	Erodes easily, wetness.	Erodes easily, rooting depth.
PcB----- Peru	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percolates slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily, rooting depth.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
PcC----- Peru	Severe: slope.	Severe: piping.	Severe: no water.	Percolates slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, erodes easily, rooting depth.
PeB----- Peru	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Percolates slowly, frost action, slope.	Erodes easily, wetness.	Erodes easily.
PeC, PeD----- Peru	Severe: slope.	Severe: piping.	Severe: no water.	Percolates slowly, frost action, slope.	Slope, erodes easily, wetness.	Slope, erodes easily.
PgA, PlA----- Pillsbury	Slight-----	Severe: piping, wetness.	Severe: no water.	Percolates slowly, frost action.	Wetness, percolates slowly.	Wetness, rooting depth.
PlB----- Pillsbury	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Percolates slowly, slope.	Wetness, percolates slowly.	Wetness, rooting depth.
Pr*. Pits						
PtA----- Pittstown	Slight-----	Severe: piping.	Severe: no water.	Percolates slowly--	Percolates slowly, wetness.	Percolates slowly, wetness, rooting depth.
PtB----- Pittstown	Moderate: slope.	Severe: piping.	Severe: no water.	Percolates slowly, slope.	Percolates slowly, wetness.	Percolates slowly, wetness, rooting depth.
PtC----- Pittstown	Severe: slope.	Severe: piping.	Severe: no water.	Percolates slowly, slope.	Slope, percolates slowly, wetness.	Slope, percolates slowly, rooting depth.
PvB----- Pittstown	Moderate: slope.	Severe: piping.	Severe: no water.	Percolates slowly, slope.	Large stones, percolates slowly, wetness.	Large stones, rooting depth, wetness.
PvC----- Pittstown	Severe: slope.	Severe: piping.	Severe: no water.	Percolates slowly, slope.	Slope, large stones, percolates slowly.	Large stones, slope, rooting depth.
Pw----- Podunk	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: outbanks cave.	Frost action, flooding, outbanks cave.	Wetness, too sandy, erodes easily.	Erodes easily.
QsC*: Quonset-----	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Warwick-----	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope-----	Slope, droughty.
QsD----- Quonset	Severe: slope, seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Ra----- Raynham	Slight-----	Severe: piping, wetness.	Severe: slow refill.	Percolates slowly, frost action.	Wetness, percolates slowly, erodes easily.	Wetness, percolates slowly, erodes easily.
Ro*. Rock outcrop						

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
Ru----- Rumney	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Frost action, flooding, cutbanks cave.	Wetness, too sandy, erodes easily.	Wetness, erodes easily.
Sa----- Saco	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Wetness-----	Wetness.
Sb----- Saco Variant	Severe: seepage.	Severe: seepage, piping, wetness.	Severe: cutbanks cave.	Flooding, frost action, cutbanks cave.	Erodes easily, wetness.	Wetness, erodes easily.
SdA----- Scio	Moderate: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave, frost action.	Erodes easily, wetness.	Erodes easily.
SdB----- Scio	Moderate: seepage, slope.	Severe: piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave, frost action.	Erodes easily, wetness.	Erodes easily.
SgA----- Stissing	Slight-----	Severe: piping, wetness.	Severe: no water.	Slope, wetness, percs slowly.	Percs slowly, wetness.	Percs slowly, wetness.
ShA----- Stissing	Slight-----	Severe: piping, wetness.	Severe: no water.	Slope, wetness, percs slowly.	Wetness, large stones, percs slowly.	Wetness, percs slowly, large stones.
ShB----- Stissing	Moderate: slope.	Severe: piping, wetness.	Severe: no water.	Slope, wetness, percs slowly.	Wetness, large stones, percs slowly.	Wetness, percs slowly, large stones.
SnA----- Sunapee	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Cutbanks cave	Wetness, too sandy.	Favorable.
SnB, SoB----- Sunapee	Severe: seepage.	Severe: piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Wetness, too sandy.	Favorable.
SoC----- Sunapee	Severe: seepage, slope.	Severe: piping, wetness.	Severe: cutbanks cave.	Slope, cutbanks cave.	Slope, wetness, too sandy.	Slope.
Su----- Sunday	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy-----	Droughty.
Ub*. Udorthents						
UnB----- Unadilla Variant	Moderate: slope.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
UnC, UnE----- Unadilla Variant	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Slope, erodes easily.
Ur*. Urban land						
WaB*: Warwick-----	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope-----	Slope, droughty.
Quonset-----	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Too sandy-----	Droughty.

See footnote at end of table.

TABLE 13.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
WdA----- Windsor	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy-----	Droughty.
WdB----- Windsor	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Too sandy-----	Droughty.
WdC, WdE----- Windsor	Severe: slope, seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, too sandy.	Slope, droughty.
Wn----- Winooski	Severe: seepage.	Severe: piping.	Severe: outbanks cave.	Flooding, frost action, outbanks cave.	Erodes easily, wetness.	Erodes easily.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
AdA, AdB, AdC, AdE----- Adams	0-3	Loamy sand-----	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	45-85	5-40	---	NP
	3-18	Loamy sand, sand, loamy fine sand.	SM, SP-SM	A-1, A-2, A-3, A-4	0	95-100	95-100	35-95	5-40	---	NP
	18-60	Sand, coarse sand	SP-SM, SW-SM, SP	A-1, A-2, A-3	0-1	90-100	70-100	20-90	0-10	---	NP
AgA, AgB----- Agawam	0-8	Very fine sandy loam.	SM, ML	A-4	0	100	100	65-95	40-65	<25	NP-3
	8-24	Fine sandy loam, very fine sandy loam, loam.	SM, ML	A-4	0	100	100	65-95	40-65	<25	NP-3
	24-36	Loamy very fine sand	SM, SP-SM	A-2, A-3, A-4	0	90-100	85-100	60-95	5-45	<20	NP-3
	36-60	Fine sand, loamy fine sand, sand.	SM, SP-SM	A-2	0	90-100	85-100	40-90	5-35	---	NP
BdB, BdC, BdD----- Bernardston	0-8	Silt loam-----	ML, CL-ML	A-4, A-6, A-7	0-5	80-100	70-95	65-95	50-85	24-45	4-14
	8-29	Silt loam, loam, channery silt loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-95	50-90	45-90	30-80	22-35	2-10
	29-60	Channery silt loam, loam, channery loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-90	50-85	45-85	30-75	20-32	2-8
BeB, BeC, BeD, BeE----- Bernardston	0-3	Stony silt loam.	ML, CL-ML, SM, SM-SC	A-2, A-4, A-6, A-7	10-20	60-90	45-85	40-85	30-75	24-45	4-14
	3-27	Silt loam, loam, channery silt loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-95	50-90	45-90	30-80	22-35	2-10
	27-60	Channery silt loam, loam, channery loam.	ML, CL-ML, SM, SM-SC	A-2, A-4	0-10	65-90	50-85	45-85	30-75	20-32	2-8
Bp*. Borohemists											
CaB*, CaC*, CaD*: Cardigan-----	0-4	Silt loam-----	ML, SM	A-4	0-5	90-100	85-95	65-85	45-80	<33	NP-5
	4-22	Silt loam, loam, channery silt loam.	ML, SM	A-4	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	22-30	Silt loam, loam, channery silt loam.	SM, ML	A-1, A-2, A-4	0-10	80-95	60-90	40-75	20-70	<33	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
CaB*, CaC*, CaD*: Kearsarge-----	0-4	Silt loam-----	ML, SM	A-4	0-5	90-100	85-95	65-85	45-80	<33	NP-5
	4-17	Silt loam, loam, channery silt loam.	ML, SM	A-4	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
CbC*, CbD*: Cardigan-----	0-4	Stony silt loam	ML, SM	A-4	5-10	80-100	70-95	60-85	35-80	<33	NP-5
	4-22	Silt loam, loam, channery silt loam.	ML, SM	A-4	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	22-30	Silt loam, loam, channery silt loam.	SM, ML	A-1, A-2, A-4	0-10	80-95	60-90	40-75	20-70	<33	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Kearsarge-----	0-4	Stony silt loam	ML, SM	A-4	5-10	80-100	70-95	60-85	45-80	<33	NP-5
	4-17	Silt loam, loam, channery silt loam.	ML, SM	A-4	0-10	80-95	70-95	60-75	35-70	<30	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Ch----- Chocorua	0-33	Mucky peat-----	Pt	A-8	0	---	---	---	---	---	---
	33-60	Gravelly sand, loamy sand, loamy fine sand.	SP, SM	A-1, A-2, A-3	0	100	60-100	30-80	0-30	---	NP
CoA, CoB, CoC, CoE----- Colton	0-4	Sandy loam-----	SM, SW-SM, SP-SM	A-1, A-2, A-3, A-4	0-5	80-90	75-85	40-70	5-45	<10	NP-2
	4-18	Gravelly loamy sand, very gravelly sand, cobbly sand.	SM, GM, SP, GP	A-1	5-20	30-80	25-75	20-50	2-20	---	NP
	18-60	Very gravelly sand, very cobbly sand.	GP, SP, GW, SW	A-1	10-45	20-55	15-50	10-30	0-5	---	NP
CyA----- Croghan	0-5	Loamy fine sand	SM, SP-SM, SW-SM	A-1, A-3, A-4, A-2	0	95-100	95-100	45-80	5-40	---	NP
	5-28	Sand, loamy sand, loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2, A-3, A-4	0	90-100	85-100	45-80	5-40	---	NP
	28-60	Sand, loamy sand	SM, SP-SM, SW-SM	A-1, A-2, A-3	0	90-100	85-100	45-75	5-30	---	NP
DtB, DtC, DtD----- Dutchess	0-7	Silt loam-----	ML, SM	A-4	0-5	85-95	70-90	60-85	40-80	20-40	NP
	7-29	Loam, silt loam, channery loam.	ML, SM	A-4	0-5	80-95	70-90	65-85	40-80	20-40	NP
	29-60	Very channery silt loam, very gravelly sandy loam.	SM, GM	A-2	5-15	45-80	30-70	25-60	15-35	20-40	NP
DuC, DuD, DuE----- Dutchess	0-4	Stony silt loam.	ML, SM	A-4	10-25	80-90	70-85	50-80	40-75	20-40	NP
	4-29	Loam, silt loam, channery loam.	ML, SM	A-4	0-20	80-90	70-85	50-80	40-75	20-40	NP
	29-60	Very channery silt loam, very gravelly sandy loam.	SM, GM	A-2	5-15	45-80	30-70	25-60	15-35	20-40	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
Gw----- Greenwood	0-72	Mucky peat-----	Pt	A-8	0	---	---	---	---	---	---
Ha, Hb----- Hadley	0-7	Silt loam-----	ML, CL-ML	A-4	0	100	95-100	85-100	60-90	<30	NP-9
	7-41	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	80-100	50-90	<39	NP-13
	41-60	Loamy fine sand, silt loam, sand.	ML, CL-ML, SM, SP-SM	A-4, A-2	0	100	95-100	50-100	5-90	<30	NP-13
HcA, HcB, HcC----- Haven	0-20	Very fine sandy loam.	ML, SM	A-4	0	80-100	75-100	65-100	40-90	<25	NP-4
	20-60	Stratified loamy fine sand to gravel.	SP, SW, GP, SM	A-1, A-3, A-2	0-20	30-90	25-85	10-60	1-25	<10	NP
HeB, HeC, HeD----- Hermon	0-7	Fine sandy loam	SM	A-2, A-4	0-5	85-95	75-90	55-80	25-45	<40	NP-10
	7-17	Gravelly coarse sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4, A-1	20-35	70-90	50-75	30-60	15-40	<40	NP-10
	17-60	Gravelly loamy coarse sand, gravelly loamy sand.	SP-SM, SM, GP-GM, GM	A-1, A-2, A-3	20-40	45-80	40-70	20-55	5-25	---	NP
HmB, HmC, HmD----- Hermon	0-3	Stony fine sandy loam.	SM	A-2, A-4, A-1	10-25	70-90	50-75	30-60	15-40	<40	NP-10
	3-17	Gravelly coarse sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4, A-1	20-35	70-90	50-75	30-60	15-40	<40	NP-10
	17-60	Gravelly loamy coarse sand, gravelly loamy sand.	SP-SM, SM, GP-GM, GM	A-1, A-2, A-3	20-40	45-80	40-70	20-55	5-25	---	NP
KeE*: Kearsarge-----	0-4	Stony silt loam	ML, SM	A-4	5-10	80-100	70-95	60-85	45-80	<33	NP-5
	4-17	Silt loam, loam, channery silt loam.	ML, SM	A-4	0-10	80-95	70-95	60-75	35-70	<30	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Cardigan-----	0-4	Stony silt loam	ML, SM	A-4	5-10	80-100	70-95	60-85	35-80	<33	NP-5
	4-22	Silt loam, loam, channery silt loam.	ML, SM	A-4	0-10	80-95	70-95	60-75	35-70	<33	NP-5
	22-30	Silt loam, loam, channery silt loam.	SM, ML	A-1, A-2, A-4	0-10	80-95	60-90	40-75	20-70	<33	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Lk----- Limerick	0-8	Silt loam-----	ML	A-4	0	100	100	95-100	80-95	---	NP
	8-40	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	80-95	---	NP
	40-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	80-95	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>						
LsE*: Lyman-----	0-2	Stony fine sandy loam.	SM, ML	A-1, A-2, A-4	5-20	60-80	60-90	35-80	15-75	<30	NP-6
	2-15	Loam, channery fine sandy loam, silt loam.	SM, ML	A-1, A-2, A-4	0-20	55-90	60-90	35-85	20-80	<30	NP-4
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Monadnock-----	0-2	Stony fine sandy loam.	SM, ML	A-2, A-4	5-15	80-100	70-95	50-85	30-60	<18	NP
	2-36	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	<12	NP
	36-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP
Rock outcrop.											
LuA*: Lyme-----	0-7	Loam-----	CL, ML, CL-ML	A-4, A-6	0-5	90-100	85-95	85-95	70-85	20-40	2-12
	7-30	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-1, A-2, A-4	0-15	80-95	70-90	40-80	25-60	<25	NP-3
	30-60	Fine sandy loam, sandy loam, gravelly sandy loam.	SM	A-1, A-2, A-4	0-15	80-95	65-90	35-70	20-45	---	NP
Moosilauke-----	0-8	Loam-----	SM	A-2, A-4	0-5	90-100	75-100	70-100	30-50	<25	NP-3
	8-20	Loamy sand, sandy loam, gravelly sandy loam.	SM	A-2, A-4	0-5	85-100	75-95	40-95	25-50	---	NP
	20-60	Loamy sand, sand, gravelly sand.	SP-SM, SP, SM	A-1, A-2, A-3	0-15	55-100	50-95	25-90	0-25	---	NP
LyA*, LyB*: Lyme-----	0-7	Stony loam-----	SM, ML	A-2, A-4	5-10	80-100	70-95	40-95	25-85	<25	NP-3
	7-30	Loam, sandy loam, gravelly sandy loam.	SM, ML	A-2, A-4	0-15	80-95	70-90	40-80	25-60	<25	NP-3
	30-60	Fine sandy loam, sandy loam, gravelly sandy loam.	SM, ML	A-2, A-4	0-15	80-95	65-90	40-80	25-60	<25	NP-3
Moosilauke-----	0-8	Stony loam-----	SM	A-2, A-4	5-15	90-100	75-100	70-100	30-50	<25	NP-3
	8-20	Loamy sand, sandy loam, gravelly sandy loam.	SM	A-2, A-4	0-5	85-100	75-95	40-95	25-50	---	NP
	20-60	Loamy sand, sand, gravelly sand.	SP-SM, SP, SM	A-1, A-2, A-3	0-15	55-100	50-95	25-90	0-25	---	NP
MaB, MaC, MaD---- Marlow	0-8	Loam-----	SM, ML, CL-ML	A-2, A-4	0-5	80-95	75-90	55-85	30-60	<30	NP-10
	8-24	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	0-15	70-95	60-90	50-85	30-60	<30	NP-10
	24-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	0-15	70-90	60-85	50-80	25-55	<30	NP-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
MbB, MbC, MbD, MbE----- Marlow	0-4	Stony loam-----	SM, ML, CL-ML	A-2, A-4	5-15	80-95	75-90	55-85	30-60	<30	NP-10
	4-24	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	5-15	70-95	60-90	50-85	30-60	<30	NP-10
	24-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SM-SC, CL-ML	A-2, A-4	5-15	70-90	60-85	50-80	25-55	<30	NP-10
McB, McC, McD---- Monadnock	0-8	Fine sandy loam	SM, ML	A-2, A-4	0-5	90-100	85-100	55-85	30-60	<18	NP
	8-36	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-100	70-100	50-85	30-60	<12	NP
	36-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-100	50-100	20-60	10-30	---	NP
MfB, MfC, MfD---- Monadnock	0-2	Stony fine sandy loam.	SM, ML	A-2, A-4	5-15	80-100	70-95	50-85	30-60	<18	NP
	2-36	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	<12	NP
	36-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP
MrC*, MrD*, MrE*: Monadnock-----	0-2	Very stony fine sandy loam.	SM, ML	A-2, A-4	10-15	80-100	70-90	50-85	30-60	<18	NP
	2-36	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	<12	NP
	36-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP
Hermon-----	0-3	Very stony fine sandy loam.	SM	A-2, A-4, A-1	5-30	70-95	50-90	30-80	15-45	<40	NP-10
	3-17	Gravelly coarse sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4, A-1	20-35	70-90	50-75	30-60	15-40	<40	NP-10
	17-60	Gravelly loamy coarse sand, gravelly loamy sand.	SP-SM, SM, GP-GM, GM	A-1, A-2, A-3	20-40	45-80	40-70	20-55	5-25	---	NP
MuD*: Monadnock-----	0-2	Bouldery fine sandy loam.	SM, ML	A-2, A-4	40-55	60-95	45-90	40-85	30-60	<18	NP
	2-36	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	<12	NP
	36-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
MuD*: Hermon-----	<u>In</u>										
	0-3	Bouldery fine sandy loam.	SM	A-2, A-4, A-1	40-55	70-95	50-90	30-80	15-45	<40	NP-10
	3-17	Gravelly coarse sandy loam, gravelly fine sandy loam, gravelly sandy loam.	SM	A-2, A-4, A-1	20-35	70-90	50-75	30-60	15-40	<40	NP-10
	17-60	Gravelly loamy coarse sand, gravelly loamy sand.	SP-SM, SM, GP-GM, GM	A-1, A-2, A-3	20-40	45-80	40-70	20-55	5-25	---	NP
MvB*, MvC*, MvD*: Monadnock-----	0-2	Stony fine sandy loam.	SM, ML	A-2, A-4	5-15	80-100	70-95	50-85	30-60	<18	NP
	2-36	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	<12	NP
	36-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP
Lyman-----	0-2	Stony fine sandy loam.	SM, ML	A-1, A-2, A-4	5-20	60-80	60-90	35-80	15-75	<30	NP-6
	2-15	Loam, channery fine sandy loam, silt loam.	SM, ML	A-1, A-2, A-4	0-20	55-90	60-90	35-85	20-80	<30	NP-4
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
MwB*, MwC*, MwD*: Monadnock-----	0-2	Stony fine sandy loam.	SM, ML	A-2, A-4	5-15	80-100	70-95	50-85	30-60	<18	NP
	2-36	Fine sandy loam, loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-85	30-60	<12	NP
	36-60	Loamy sand, gravelly loamy sand, gravelly loamy fine sand.	SM, SP-SM, SW-SM	A-1, A-2	0-35	65-85	50-80	20-60	10-30	---	NP
Lyman-----	0-2	Stony fine sandy loam.	SM, ML	A-1, A-2, A-4	5-20	60-80	60-90	35-80	15-75	<30	NP-6
	2-15	Loam, channery fine sandy loam, silt loam.	SM, ML	A-1, A-2, A-4	0-20	55-90	60-90	35-85	20-80	<30	NP-4
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
Na----- Naumburg	0-7	Loamy sand-----	SM, SW-SM, SP-SM	A-2, A-4, A-3	0	95-100	95-100	50-85	5-45	---	NP
	7-33	Loamy fine sand, loamy sand, sand.	SM, SW-SM, SP-SM	A-1, A-2, A-3	0	90-100	90-100	45-85	5-35	---	NP
	33-60	Sand, loamy sand, loamy fine sand.	SM, SW-SM, SP-SM	A-1, A-2, A-3	0	90-100	90-100	45-80	5-35	---	NP
NnA----- Ninigret	0-9	Fine sandy loam	SM, ML	A-4	0	95-100	90-100	70-95	40-65	<25	NP-3
	9-26	Fine sandy loam, sandy loam, very fine sandy loam.	SM	A-2, A-4	0	95-100	90-100	65-95	20-50	<25	NP-3
	26-60	Loamy sand, sand, gravelly sand.	SP, SM, GP, SP-SM	A-1, A-2, A-3	0-20	45-100	30-100	25-90	0-30	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
Of----- Ondawa	0-10	Fine sandy loam	SM, ML	A-2, A-4	0	100	100	60-100	30-60	---	NP
	10-36	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	100	80-95	20-70	---	NP
	36-60	Stratified loamy fine sand to sand.	SP, SM	A-2, A-3	0	90-100	75-100	70-90	0-35	---	NP
Ot----- Ossipee	0-28	Mucky peat-----	Pt	A-8	0	---	---	---	---	---	---
	28-60	Silt loam, very fine sandy loam, fine sandy loam.	SM, ML, CL-ML	A-4	0	100	100	100	40-90	<30	NP-10
PcA, PcB, PcC----- Peru	0-8	Loam-----	SM, ML, CL-ML	A-2, A-4	0-10	80-95	75-90	50-85	25-60	<30	NP-10
	8-21	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	0-15	75-95	65-90	55-85	30-65	<30	NP-10
	21-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	0-15	70-90	60-85	55-80	20-60	<30	NP-10
PeB, PeC, PeD----- Peru	0-2	Stony loam	SM, ML, CL-ML	A-2, A-4	5-15	80-95	75-90	50-85	25-60	<30	NP-10
	2-21	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-15	75-95	65-95	55-85	30-65	<30	NP-10
	21-60	Fine sandy loam, loam, gravelly sandy loam.	SM, ML, SC, SM-SC	A-2, A-4	5-15	70-90	60-85	55-80	20-60	<30	NP-10
PgA----- Pillsbury	0-8	Loam-----	SM, ML	A-1, A-2, A-4	0-5	90-100	85-95	85-95	70-85	20-40	2-12
	8-22	Loam, fine sandy loam, gravelly fine sandy loam.	SM, ML	A-1, A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
	22-60	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM, ML	A-1, A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
PlA, PlB----- Pillsbury	0-5	Stony loam-----	SM, ML	A-2, A-4	5-10	80-100	55-95	35-95	25-85	<25	NP-3
	5-22	Loam, fine sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
	22-60	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-15	80-95	55-95	35-80	25-60	<25	NP-3
Pr*. Pits											
PtA, PtB, PtC----- Pittstown	0-9	Silt loam-----	ML, CL-ML	A-4, A-6, A-7	0-5	80-100	70-95	65-95	50-85	25-45	4-15
	9-22	Silt loam, gravelly loam, very fine sandy loam.	ML, SM, CL-ML, SM-SC	A-2, A-4	0-15	65-95	60-90	50-90	30-80	20-35	2-10
	22-60	Channery silt loam, gravelly loam, very fine sandy loam.	ML, SM, CL-ML, SM-SC	A-2, A-4	0-15	60-95	55-85	45-85	30-75	20-30	2-10

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches Pct	Percentage passing sieve number--				Liquid limit Pct	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
PvB, PvC----- Pittstown	0-4	Stony silt loam	ML, SM, CL-ML, SM-SC	A-2, A-4, A-6, A-7	10-20	65-90	60-85	50-85	30-75	25-45	4-15
	4-22	Silt loam, very fine sandy loam, gravelly loam.	ML, SM, CL-ML, SM-SC	A-2, A-4	0-15	65-95	60-90	50-90	30-80	20-35	2-10
	22-60	Channery silt loam, channery very fine sandy loam, gravelly loam.	ML, SM, CL-ML, SM-SC	A-2; A-4	0-15	60-95	55-85	45-85	30-75	20-30	2-10
Pw----- Podunk	0-10	Fine sandy loam	SM, ML	A-2, A-4	0	100	100	60-100	30-90	---	NP
	10-29	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	100	60-95	30-75	---	NP
	29-60	Stratified loamy fine sand to gravelly coarse sand.	SP-SM, SM	A-2, A-1, A-3	0	75-100	65-100	35-85	5-25	---	NP
QsC*: Quonset-----	0-6	Gravelly fine sandy loam.	GP-GM, GM, SP-SM, SM	A-1, A-2, A-3, A-4	0-5	40-75	35-70	20-60	5-40	---	NP
	6-16	Gravelly loamy sand, gravelly fine sandy loam.	GP-GM, GM, SP-SM, SM	A-1, A-2	0-5	45-75	40-75	20-50	5-20	---	NP
	16-60	Stratified very gravelly coarse sand to very gravelly sand.	GP, GP-GM, SP, SP-SM	A-1, A-2	0-5	20-70	10-60	5-45	0-10	---	NP
Warwick-----	0-8	Gravelly fine sandy loam.	GM, GW-GM, SP-SM, SM	A-1, A-2, A-4	0-15	40-75	35-70	20-65	10-50	<37	NP-8
	8-24	Gravelly fine sandy loam, gravelly sandy loam, very gravelly sandy loam.	GM, GW-GM, SP-SM, SM	A-1, A-2, A-4	0-15	40-75	35-70	20-60	10-40	<37	NP-8
	24-60	Stratified loamy sand to gravel.	SW, GW, SW-SM, GW-GM	A-1, A-2	5-20	50-65	25-50	15-35	0-15	---	NP
QsD----- Quonset	0-6	Gravelly fine sandy loam.	GP-GM, GM, SP-SM, SM	A-1, A-2, A-3, A-4	0-5	40-75	35-70	20-60	5-40	---	NP
	6-16	Gravelly loamy sand, gravelly fine sandy loam.	GP-GM, GM, SP-SM, SM	A-1, A-2	0-5	45-75	40-75	20-50	5-20	---	NP
	16-60	Stratified very gravelly coarse sand to very gravelly sand.	GP, GP-GM, SP, SP-SM	A-1, A-2	0-5	20-70	10-60	5-45	0-10	---	NP
Ra----- Raynham	0-9	Silt loam-----	ML	A-4	0	100	95-100	80-100	55-95	<25	NP-10
	9-24	Silt loam, silt, very fine sandy loam.	ML	A-4	0	100	95-100	80-100	55-95	<25	NP-10
	24-60	Silt loam, silt, very fine sandy loam.	ML	A-4	0	100	95-100	90-100	70-95	<25	NP-10
Ro*. Rock outcrop											

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	<u>In</u>				<u>Pct</u>					<u>Pct</u>	
Ru----- Rumney	0-7	Loam-----	ML, SM	A-4	0	100	85-100	70-100	40-85	---	NP
	7-38	Fine sandy loam, sandy loam, loam.	SM, ML	A-2, A-4	0	100	85-100	50-95	25-75	---	NP
	38-60	Stratified silt to gravelly sand.	SM, SP-SM	A-1, A-2, A-3	0	80-100	45-95	25-70	5-30	---	NP
Sa----- Saco	0-11	Silt loam-----	ML, OL	A-4	0	100	100	95-100	70-95	<40	NP-10
	11-48	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-95	<40	NP-10
	48-60	Stratified loamy fine sandy to gravelly coarse sand.	SP, SM, SP-SM	A-1, A-2, A-3	0	80-100	35-100	10-70	0-20	---	NP
Sb----- Saco Variant	0-10	Mucky silt loam	ML, OL	A-4	0	100	100	95-100	70-95	<40	NP-10
	10-28	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	70-95	<40	NP-10
	28-60	Stratified loamy sand to gravelly sand.	SP, SM, SP-SM	A-1, A-2, A-3	0	80-100	35-100	10-70	0-20	---	NP
SdA, SdB----- Scio	0-10	Silt loam-----	ML	A-4	0	100	95-100	90-100	70-90	<30	NP-4
	10-48	Silt loam, very fine sandy loam.	ML	A-4	0	100	95-100	90-100	70-95	<30	NP-4
	48-60	Stratified very fine sand to silt loam.	ML	A-4	0	100	95-100	90-100	60-90	<30	NP-4
SgA----- Stissing	0-7	Silt loam-----	ML, CL-ML	A-4, A-6, A-7	0-5	80-100	70-95	65-95	50-85	24-45	4-14
	7-19	Channery silt loam, silt loam, channery loam.	SM, ML, SM-SC, CL-ML	A-4	0-15	70-100	60-95	55-95	40-85	22-34	2-10
	19-60	Channery silt loam, silt loam, channery loam.	GM-GC, CL-ML, GM, ML	A-4	0-15	65-75	55-70	50-70	40-65	20-32	2-8
ShA, ShB----- Stissing	0-6	Stony silt loam.	SM, SM-SC, ML, CL-ML	A-4, A-6, A-7	3-10	70-100	60-95	55-95	40-85	24-45	4-14
	6-19	Channery silt loam, silt loam, channery loam.	SM, ML, SM-SC, CL-ML	A-4	0-15	70-100	60-95	55-95	40-85	22-34	2-10
	19-60	Channery silt loam, silt loam, channery loam.	GM-GC, CL-ML, GM, ML	A-4	0-15	65-75	55-70	50-70	40-65	20-32	2-8
SnA, SnB----- Sunapee	0-7	Fine sandy loam	ML, CL-ML	A-4, A-6	0-5	90-100	85-95	85-95	70-85	20-40	2-12
	7-24	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-80	25-60	<25	NP-3
	24-60	Fine sandy loam, gravelly sandy loam, loamy sand.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-80	25-60	---	NP
SoB, SoC----- Sunapee	0-4	Stony fine sandy loam.	SM, ML	A-2, A-4	5-10	80-100	70-95	50-95	25-85	<25	NP-3
	4-24	Fine sandy loam, sandy loam, gravelly fine sandy loam.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-80	25-60	<25	NP-3
	24-60	Fine sandy loam, gravelly sandy loam, loamy sand.	SM, ML	A-2, A-4	0-10	80-95	70-90	50-80	25-60	---	NP

See footnote at end of table.

TABLE 14.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches Pet	Percentage passing sieve number--				Liquid limit Pet	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
Su----- Sunday	0-5	Loamy sand-----	SM, SP-SM	A-2, A-3	0	100	95-100	50-80	5-35	---	NP
	5-30	Loamy fine sand, fine sand, coarse sand.	SM, SP-SM	A-1, A-2, A-3	0	95-100	85-100	30-80	5-35	---	NP
	30-60	Stratified loamy fine sand to sand.	SM, SP-SM, SP	A-1, A-2, A-3	0	95-100	85-100	25-80	0-35	---	NP
Ub*. Udorthents											
UnB, UnC, UnE---- Unadilla Variant	0-3	Silt loam-----	ML	A-4	0	100	95-100	90-100	70-90	<35	NP-10
	3-24	Silt loam, very fine sandy loam.	ML, CL-ML	A-4	0	100	95-100	90-100	70-90	<25	NP-10
	24-60	Silt loam, very fine sandy loam, loamy very fine sand.	ML, CL-ML	A-4	0	100	95-100	90-100	60-90	<25	NP-10
Ur*. Urban land											
WaB*: Warwick-----	0-8	Gravelly fine sandy loam.	GM, GW-GM, SP-SM, SM	A-1, A-2, A-4	0-15	40-75	35-70	20-65	10-50	<37	NP-8
	8-24	Gravelly fine sandy loam, gravelly sandy loam, very gravelly sandy loam.	GM, GW-GM, SP-SM, SM	A-1, A-2, A-4	0-15	40-75	35-70	20-60	10-40	<37	NP-8
	24-60	Stratified loamy sand to gravel.	SW, GW, SW-SM, GW-GM	A-1, A-2	5-20	50-65	25-50	15-35	0-15	---	NP
Quonset-----	0-6	Gravelly fine sandy loam.	GP-GM, GM, SP-SM, SM	A-1, A-2, A-3, A-4	0-5	40-75	35-70	20-60	5-40	---	NP
	6-16	Gravelly loamy sand, gravelly fine sandy loam.	GP-GM, GM, SP-SM, SM	A-1, A-2	0-5	45-75	40-75	20-50	5-20	---	NP
	16-60	Stratified very gravelly coarse sand to very gravelly sand.	GP, GP-GM, SP, SP-SM	A-1, A-2	0-5	20-70	10-60	5-45	0-10	---	NP
WdA, WdB, WdC, WdE----- Windsor	0-4	Loamy sand-----	SM	A-2, A-1	0	95-100	85-100	35-85	20-35	---	NP
	4-25	Loamy sand, loamy fine sand, sand.	SW-SM, SM, SP-SM	A-2, A-1	0	95-100	85-100	45-95	10-30	---	NP
	25-60	Sand, fine sand	SP-SM, SM	A-2, A-3, A-1	0	90-100	75-100	40-95	5-20	---	NP
Wn----- Winooski	0-9	Silt loam-----	ML, SM	A-4	0	100	95-100	90-100	40-90	<30	NP
	9-60	Silt loam, very fine sandy loam, loamy very fine sand.	ML, SM	A-4	0	100	95-100	90-100	40-90	<30	NP

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm ³	In/hr	In/in	pH			Pct
AdA, AdB, AdC, AdE-----	0-3	0-5	1.00-1.30	6.0-20	0.05-0.15	4.5-5.5	0.17	5	1-4
Adams	3-18	0-5	1.10-1.45	6.0-20	0.04-0.09	4.5-5.5	0.17		
	18-60	0-5	1.20-1.50	>20	0.03-0.04	4.5-6.0	0.17		
AgA, AgB-----	0-8	4-10	1.10-1.20	2.0-6.0	0.13-0.25	4.5-6.5	0.28	3	1-5
Agawam	8-24	1-10	1.20-1.40	2.0-6.0	0.11-0.21	4.5-6.5	0.37		
	24-36	1-3	1.30-1.40	2.0-20	0.11-0.18	4.5-6.5	0.28		
	36-60	1-2	1.30-1.40	6.0-20	0.01-0.09	4.5-6.5	0.17		
BdB, BdC, BdD----	0-8	2-12	1.00-1.15	0.6-2.0	0.15-0.22	4.5-6.0	0.28	3	2-5
Bernardston	8-29	2-12	1.25-1.50	0.6-2.0	0.13-0.20	4.5-6.0	0.37		
	29-60	1-12	1.75-1.90	0.06-0.2	0.07-0.16	4.5-6.0	0.28		
BeB, BeC, BeD, BeE-----	0-3	2-12	1.00-1.20	0.6-2.0	0.13-0.20	4.5-6.0	0.20	3	2-5
Bernardston	3-27	2-12	1.25-1.50	0.6-2.0	0.13-0.20	4.5-6.0	0.37		
	27-60	1-12	1.75-1.90	0.06-0.2	0.07-0.16	4.5-6.0	0.28		
Bp*, Borohemists									
CaB*, CaC*, CaD*:									
Cardigan-----	0-4	8-18	1.00-1.20	0.6-2.0	0.15-0.21	4.5-6.0	0.37	2	3-8
	4-22	8-18	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.0	0.37		
	22-30	4-16	1.50-1.70	0.6-2.0	0.10-0.14	4.5-6.0	0.37		
	30	---	---	---	---	---	---		
Kearsarge-----	0-4	8-18	1.00-1.20	0.6-2.0	0.15-0.21	4.5-6.0	0.37	2	2-7
	4-17	4-18	1.20-1.50	0.6-2.0	0.10-0.20	4.5-6.0	0.37		
	17	---	---	---	---	---	---		
CbC*, CbD*:									
Cardigan-----	0-4	8-18	1.00-1.20	0.6-2.0	0.12-0.16	4.5-6.0	0.32	2	---
	4-22	8-18	1.20-1.40	0.6-2.0	0.10-0.20	4.5-6.0	0.37		
	22-30	4-16	1.50-1.70	0.6-2.0	0.10-0.14	4.5-6.0	0.37		
	30	---	---	---	---	---	---		
Kearsarge-----	0-4	8-18	1.00-1.20	0.6-2.0	0.12-0.16	4.5-6.0	0.32	2	---
	4-17	4-18	1.20-1.50	0.6-2.0	0.10-0.20	4.5-6.0	0.37		
	17	---	---	---	---	---	---		
Rock outcrop.									
Ch-----	0-33	---	0.10-0.30	0.6-6.0	0.20-0.25	3.6-5.0	0.17	---	---
Chocorua	33-60	1-5	1.20-1.50	>6.0	0.01-0.11	4.5-6.0	---		
CoA, CoB, CoC, CoE-----	0-4	1-7	1.10-1.40	>6.0	0.03-0.12	3.6-5.0	0.17	3	3-8
Colton	4-18	0-5	1.25-1.55	>6.0	0.02-0.05	4.5-5.5	0.17		
	18-60	0-3	1.45-1.65	>20	0.01-0.02	4.5-6.0	0.17		
CyA-----	0-5	0-5	1.1-1.5	6.0-20	0.05-0.09	4.5-6.0	0.17	5	2-9
Croghan	5-28	0-5	1.2-1.5	>20	0.03-0.07	4.5-6.0	0.17		
	28-60	0-5	1.2-1.5	>20	0.03-0.06	4.5-6.0	0.17		
DtB, DtC, DtD----	0-7	8-18	1.0-1.2	0.6-2.0	0.13-0.20	4.5-6.0	0.37	3	3-8.
Dutchess	7-29	8-18	1.2-1.4	0.6-2.0	0.12-0.20	4.5-6.0	0.37		
	29-60	3-18	1.5-1.8	0.6-2.0	0.02-0.12	5.1-6.0	0.24		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm ³	In/hr	In/in	pH			Pct
DuC, DuD, DuE----- Dutchess	0-4 4-29 29-60	8-18 8-18 3-18	1.0-1.2 1.2-1.4 1.5-1.8	0.6-2.0 0.6-2.0 0.6-2.0	0.13-0.20 0.12-0.20 0.02-0.12	4.5-6.0 4.5-6.0 5.1-6.0	0.28 0.37 0.24	3	3-8.
Gw----- Greenwood	0-72	---	0.10-0.25	0.6-6.0	0.45-0.55	3.6-5.5	----	---	---
Ha, Hb----- Hadley	0-7 7-41 41-60	4-10 2-10 1-8	1.20-1.50 1.20-1.50 1.20-1.50	0.6-2.0 0.6-6.0 0.6-6.0	0.15-0.25 0.13-0.20 0.10-0.20	4.5-7.3 4.5-7.8 5.1-7.8	0.49 0.49 0.49	5	2-5
HcA, HcB, HcC----- Haven	0-20 20-60	5-18 0-3	1.10-1.40 1.45-1.65	0.6-2.0 >20	0.15-0.25 0.01-0.03	4.5-6.0 4.5-6.0	0.43 0.17	3	2-6
HeB, HeC, HeD----- Hermon	0-7 7-17 17-60	2-6 2-7 1-4	0.95-1.20 1.00-1.30 1.50-1.70	6.0-20 6.0-20 6.0-20	0.09-0.20 0.05-0.17 0.03-0.10	3.6-5.5 3.6-6.0 5.1-6.0	0.17 0.10 0.10	3	3-7
HmB, HmC, HmD----- Hermon	0-3 3-17 17-60	2-6 2-7 1-4	0.95-1.20 1.00-1.30 1.50-1.70	6.0-20 6.0-20 6.0-20	0.07-0.20 0.05-0.17 0.03-0.10	3.6-5.5 3.6-6.0 5.1-6.0	0.10 0.10 0.10	3	3-7
KeE*: Kearsarge-----	0-4 4-17 17	8-18 4-18 ---	1.00-1.20 1.20-1.50 ---	0.6-2.0 0.6-2.0 ---	0.12-0.16 0.10-0.20 ---	4.5-6.0 4.5-6.0 ---	0.32 0.37 ---	2	---
Cardigan-----	0-4 4-22 22-30 30	8-18 8-18 4-16 ---	1.00-1.20 1.20-1.40 1.50-1.70 ---	0.6-2.0 0.6-2.0 0.6-2.0 ---	0.12-0.16 0.10-0.20 0.10-0.14 ---	4.5-6.0 4.5-6.0 4.5-6.0 ---	0.32 0.37 0.37 ---	2	---
Rock outcrop.									
Lk----- Limerick	0-8 8-40 40-60	4-10 2-10 1-8	1.10-1.50 1.10-1.50 1.20-1.50	0.6-2.0 0.6-2.0 0.6-2.0	0.18-0.30 0.18-0.26 0.18-0.25	5.1-7.3 5.6-7.3 5.6-7.3	0.49 0.49 0.49	3	2-5
LsE*: Lyman-----	0-2 2-15 15	2-10 2-10 ---	0.75-1.20 0.90-1.40 ---	2.0-6.0 2.0-6.0 ---	0.13-0.24 0.08-0.28 ---	3.6-6.0 3.6-6.0 ---	0.20 0.32 ---	2	---
Monadnock-----	0-2 2-36 36-60	1-8 1-8 1-5	0.80-1.20 0.80-1.30 1.30-1.60	0.6-2.0 0.6-2.0 2.0-6.0	0.14-0.20 0.09-0.17 0.04-0.08	3.6-6.0 3.6-6.0 3.6-6.0	0.24 0.28 0.17	3	---
Rock outcrop.									
LuA*: Lyme-----	0-7 7-30 30-60	3-10 3-10 2-7	1.00-1.25 1.35-1.60 1.45-1.70	0.6-6.0 0.6-6.0 0.6-6.0	0.15-0.24 0.05-0.20 0.04-0.16	4.5-5.5 4.5-5.5 4.5-5.5	0.28 0.32 0.24	3	3-8
Moosilauke-----	0-8 8-20 20-60	2-10 2-6 0-2	0.80-1.20 1.30-1.55 1.40-1.65	2.0-6.0 2.0-6.0 >6.0	0.10-0.23 0.07-0.18 0.01-0.13	4.5-6.0 4.5-6.0 4.5-6.0	0.24 0.24 0.10	3	3-8
LyA*, LyB*: Lyme-----	0-7 7-30 30-60	3-10 3-10 2-7	1.00-1.25 1.35-1.60 1.45-1.70	0.6-6.0 0.6-6.0 0.6-6.0	0.06-0.24 0.05-0.20 0.04-0.16	4.5-5.5 4.5-5.5 4.5-5.5	0.24 0.32 0.24	3	---
Moosilauke-----	0-8 8-20 20-60	2-10 2-6 0-2	0.80-1.20 1.30-1.55 1.40-1.65	2.0-6.0 2.0-6.0 >6.0	0.10-0.23 0.07-0.18 0.01-0.13	4.5-6.0 4.5-6.0 4.5-6.0	0.24 0.24 0.10	3	---

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm ³	In/hr	In/in	pH			Pct
MaB, MaC, MaD----	0-8	3-10	1.00-1.30	0.6-2.0	0.10-0.23	3.6-6.0	0.24	3	2-8
Marlow	8-24	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	0.32		
	24-60	3-10	1.60-2.05	0.06-0.6	0.05-0.12	3.6-6.0	0.20		
MbB, MbC, MbD, MbE-----	0-4	3-10	1.00-1.30	0.6-2.0	0.10-0.23	3.6-6.0	0.20	3	---
Marlow	4-24	3-10	1.30-1.60	0.6-2.0	0.06-0.20	3.6-6.0	0.32		
	24-60	3-10	1.60-2.05	0.06-0.6	0.05-0.12	3.6-6.0	0.20		
McB, McC, McD----	0-8	1-8	0.80-1.20	0.6-2.0	0.15-0.21	3.6-6.0	0.28	3	3-8
Monadnock	8-36	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	0.28		
	36-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	0.17		
MfB, MfC, MfD----	0-2	1-8	0.80-1.20	0.6-2.0	0.14-0.20	3.6-6.0	0.24	3	---
Monadnock	2-36	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	0.28		
	36-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	0.17		
MrC*, MrD*, MrE*:									
Monadnock-----	0-2	1-8	0.80-1.20	0.6-2.0	0.10-0.18	3.6-6.0	0.24	3	---
	2-36	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	0.28		
	36-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	0.17		
Hermon-----	0-3	2-6	0.95-1.20	6.0-20	0.07-0.20	3.6-5.5	0.10	3	---
	3-17	2-7	1.00-1.30	6.0-20	0.05-0.17	3.6-6.0	0.10		
	17-60	1-4	1.50-1.70	6.0-20	0.03-0.10	5.1-6.0	0.10		
MuD*:									
Monadnock-----	0-2	1-8	0.80-1.20	0.6-2.0	0.14-0.20	3.6-6.0	0.20	3	---
	2-36	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	0.28		
	36-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	0.17		
Hermon-----	0-3	2-6	0.95-1.20	6.0-20	0.07-0.20	3.6-5.5	0.10	3	---
	3-17	2-7	1.00-1.30	6.0-20	0.05-0.17	3.6-6.0	0.10		
	17-60	1-4	1.50-1.70	6.0-20	0.03-0.10	5.1-6.0	0.10		
MvB*, MvC*, MvD*:									
Monadnock-----	0-2	1-8	0.80-1.20	0.6-2.0	0.14-0.20	3.6-6.0	0.24	3	---
	2-36	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	0.28		
	36-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	0.17		
Lyman-----	0-2	2-10	0.75-1.20	2.0-6.0	0.13-0.24	3.6-6.0	0.20	2	---
	2-15	2-10	0.90-1.40	2.0-6.0	0.08-0.28	3.6-6.0	0.32		
	15	---	---	---	---	---	---		
MwB*, MwC*, MwD*:									
Monadnock-----	0-2	1-8	0.80-1.20	0.6-2.0	0.14-0.20	3.6-6.0	0.24	3	---
	2-36	1-8	0.80-1.30	0.6-2.0	0.09-0.17	3.6-6.0	0.28		
	36-60	1-5	1.30-1.60	2.0-6.0	0.04-0.08	3.6-6.0	0.17		
Lyman-----	0-2	2-10	0.75-1.20	2.0-6.0	0.13-0.24	3.6-6.0	0.20	2	---
	2-15	2-10	0.90-1.40	2.0-6.0	0.08-0.28	3.6-6.0	0.32		
	15	---	---	---	---	---	---		
Rock outcrop.									
Na-----	0-7	1-5	1.20-1.50	2.0-6.0	0.05-0.09	3.6-5.5	0.17	5	3-7
Naumburg	7-33	1-5	1.20-1.50	6.0-20	0.06-0.08	3.6-5.5	0.17		
	33-60	1-5	1.45-1.65	6.0-20	0.04-0.06	4.5-6.5	0.17		
NnA-----	0-9	3-7	1.00-1.25	2.0-6.0	0.13-0.25	4.5-6.0	0.28	3	2-8
Ninigret	9-26	3-7	1.35-1.60	2.0-6.0	0.06-0.18	4.5-6.0	0.32		
	26-60	0-2	1.45-1.70	6.0-20	0.01-0.13	4.5-6.0	0.10		
Of-----	0-10	1-9	1.15-1.40	2.0-6.0	0.12-0.26	4.5-6.5	0.24	5	3-7
Ondawa	10-36	1-9	1.15-1.45	2.0-6.0	0.12-0.22	4.5-6.5	0.37		
	36-60	0-3	1.30-1.50	2.0-20	0.04-0.13	4.5-6.5	0.20		

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm ³	In/hr	In/in	pH			Pct
Ot----- Ossipee	0-28 28-60	--- 5-10	0.10-0.30 1.20-1.50	0.6-6.0 0.2-0.6	0.20-0.25 0.13-0.28	3.6-5.5 5.1-6.5	---	---	---
PeA, PeB, PeC----- Peru	0-8 8-21 21-60	3-10 3-10 3-10	1.00-1.30 1.30-1.60 1.60-2.05	0.6-2.0 0.6-2.0 0.06-0.6	0.10-0.23 0.06-0.20 0.05-0.12	3.6-6.0 3.6-6.0 3.6-6.0	0.24 0.32 0.24	3	2-6
PeB, PeC, PeD----- Peru	0-2 2-21 21-60	3-10 3-10 3-10	1.00-1.30 1.30-1.60 1.60-2.05	0.6-2.0 0.6-2.0 0.06-0.6	0.10-0.23 0.06-0.20 0.05-0.12	3.6-6.0 3.6-6.0 3.6-6.0	0.20 0.32 0.24	3	---
PgA----- Pillsbury	0-8 8-22 22-60	2-10 2-10 2-10	1.00-1.30 1.20-1.60 1.80-2.00	0.6-2.0 0.6-2.0 0.06-0.2	0.06-0.24 0.04-0.20 0.01-0.05	4.5-5.5 4.5-5.5 4.5-6.0	0.28 0.32 0.24	3	4-7
PlA, PlB----- Pillsbury	0-5 5-22 22-60	2-10 2-10 2-10	1.00-1.30 1.20-1.60 1.80-2.00	0.6-2.0 0.6-2.0 0.06-0.2	0.06-0.24 0.04-0.20 0.01-0.05	4.5-5.5 4.5-5.5 4.5-6.0	0.24 0.32 0.24	3	---
Pr*. Pits									
PtA, PtB, PtC----- Pittstown	0-9 9-22 22-60	2-12 2-12 2-12	1.00-1.30 1.30-1.60 1.70-2.00	0.6-2.0 0.6-2.0 0.06-0.2	0.15-0.20 0.15-0.20 0.10-0.15	4.5-6.0 4.5-6.0 4.5-6.0	0.28 0.37 0.28	3	2-6
PvB, PvC----- Pittstown	0-4 4-22 22-60	2-12 2-12 2-12	1.00-1.30 1.30-1.60 1.70-2.00	0.6-2.0 0.6-2.0 0.06-0.2	0.15-0.20 0.15-0.20 0.10-0.15	4.5-6.0 4.5-6.0 4.5-6.0	0.20 0.37 0.28	3	2-6
Pw----- Podunk	0-10 10-29 29-60	1-9 1-9 0-3	1.15-1.40 1.15-1.45 1.30-1.50	2.0-6.0 2.0-6.0 2.0-20	0.12-0.24 0.12-0.18 0.04-0.13	4.5-6.5 4.5-6.5 4.5-6.5	0.24 0.37 0.20	5	3-8
QsC*: Quonset-----	0-6 6-16 16-60	2-7 1-4 0-2	1.20-1.30 1.40-1.50 1.40-1.50	2.0-20 2.0-20 >20	0.04-0.13 0.04-0.07 0.01-0.03	3.6-5.5 3.6-5.5 5.1-6.5	0.17 0.17 0.10	3	.6-7
Warwick-----	0-8 8-24 24-60	3-8 3-8 0-3	1.10-1.20 1.20-1.40 1.30-1.50	2.0-6.0 2.0-6.0 >20	0.04-0.20 0.03-0.16 0.01-0.05	3.6-6.5 4.5-6.0 4.5-6.5	0.17 0.24 0.10	3	---
QsD----- Quonset	0-6 6-16 16-60	2-7 1-4 0-2	1.20-1.30 1.40-1.50 1.40-1.50	2.0-20 2.0-20 >20	0.04-0.13 0.04-0.07 0.01-0.03	3.6-5.5 3.6-5.5 5.1-6.5	0.17 0.17 0.10	3	.6-7
Ra----- Raynham	0-9 9-24 24-60	3-16 3-16 3-16	1.2-1.5 1.2-1.5 1.2-1.5	0.6-2.0 0.2-2.0 0.06-0.2	0.20-0.30 0.18-0.26 0.18-0.22	5.1-7.3 5.1-7.3 5.6-7.8	0.49 0.64 0.64	5	3-10
Ro*. Rock outcrop									
Ru----- Rumney	0-7 7-38 38-60	1-10 1-9 0-3	1.10-1.35 1.15-1.45 1.30-1.50	2.0-6.0 2.0-6.0 >6.0	0.15-0.27 0.12-0.19 0.04-0.13	4.5-6.5 4.5-6.5 4.5-6.5	0.28 0.37 0.20	5	4-8
Sa----- Saco	0-11 11-48 48-60	4-10 2-10 1-8	1.00-1.40 1.20-1.50 1.30-1.60	0.6-2.0 0.6-2.0 >6.0	0.17-0.30 0.15-0.26 0.01-0.13	5.1-6.5 5.1-6.5 5.6-7.3	0.49 0.64 0.10	5	3-20
Sb----- Saco Variant	0-10 10-28 28-60	4-10 2-10 1-8	0.70-1.00 1.20-1.50 1.30-1.60	0.6-2.0 0.6-2.0 6.0-20	0.20-0.30 0.15-0.26 0.01-0.13	5.1-6.5 5.1-6.5 5.1-6.5	0.49 0.55 0.10	5	5-20

See footnote at end of table.

TABLE 15.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Erosion factors		Organic matter
							K	T	
	In	Pct	G/cm ³	In/hr	In/in	pH			Pct
SdA, SdB----- Scio	0-10 10-48 48-60	2-15 2-15 0-5	1.20-1.50 1.20-1.50 1.45-1.65	0.6-2.0 0.6-2.0 2.0-6.0	0.18-0.21 0.17-0.20 0.12-0.19	4.5-6.0 4.5-6.0 5.1-6.0	0.49 0.64 0.64	3	2-8
SgA----- Stissing	0-7 7-19 19-60	2-12 2-12 1-12	1.00-1.15 1.25-1.50 1.75-1.90	0.6-2.0 0.6-2.0 0.06-0.2	0.18-0.23 0.15-0.19 0.02-0.16	3.6-6.0 3.6-6.0 3.6-6.0	0.28 0.37 0.28	3	2-5
ShA, ShB----- Stissing	0-6 6-19 19-60	2-12 2-12 1-12	1.00-1.20 1.25-1.50 1.75-1.90	0.6-2.0 0.6-2.0 0.06-0.2	0.18-0.23 0.15-0.19 0.02-0.16	3.6-6.0 3.6-6.0 3.6-6.0	0.20 0.37 0.28	3	2-5
SnA, SnB----- Sunapee	0-7 7-24 24-60	2-14 2-12 2-10	0.80-1.20 0.80-1.30 1.20-1.50	0.6-2.0 0.6-2.0 0.6-6.0	0.16-0.22 0.07-0.17 0.07-0.17	3.6-5.0 3.6-5.0 3.6-6.0	0.28 0.20 0.20	3	3-8
SoB, SoC----- Sunapee	0-4 4-24 24-60	2-14 2-12 2-10	0.80-1.20 0.80-1.30 1.20-1.50	0.6-2.0 0.6-2.0 0.6-6.0	0.14-0.20 0.07-0.17 0.07-0.17	3.6-5.0 3.6-5.0 3.6-6.0	0.24 0.20 0.20	3	3-8
Su----- Sunday	0-5 5-30 30-60	0-5 0-2 0-2	1.25-1.55 1.25-1.55 1.30-1.60	>6.0 >6.0 >6.0	0.08-0.17 0.01-0.10 0.01-0.08	4.5-6.0 4.5-6.0 4.5-6.0	0.15 0.15 0.15	5	1-3
Ub*. Udorthents									
UnB, UnC, UnE---- Unadilla Variant	0-3 3-24 24-60	2-18 1-18 1-18	1.20-1.50 1.20-1.50 1.45-1.65	0.6-2.0 0.6-2.0 0.2-0.6	0.18-0.21 0.17-0.20 0.12-0.20	4.5-6.0 4.5-6.0 5.1-7.3	0.49 0.64 0.64	3	2-7
Ur*. Urban land									
WaB*: Warwick-----	0-8 8-24 24-60	3-8 3-8 0-3	1.10-1.20 1.20-1.40 1.30-1.50	2.0-6.0 2.0-6.0 >20	0.04-0.20 0.03-0.16 0.01-0.05	3.6-6.5 4.5-6.0 4.5-6.5	0.17 0.24 0.10	3	---
Quonset-----	0-6 6-16 16-60	2-7 1-4 0-2	1.20-1.30 1.40-1.50 1.40-1.50	2.0-20 2.0-20 >20	0.04-0.13 0.04-0.07 0.01-0.03	3.6-5.5 3.6-5.5 5.1-6.5	0.17 0.17 0.10	3	.6-7
WdA, WdB, WdC, WdE----- Windsor	0-4 4-25 25-60	1-3 0-3 0-2	1.00-1.20 1.30-1.55 1.40-1.65	>6.0 >6.0 >6.0	0.08-0.12 0.02-0.12 0.01-0.08	4.5-6.0 4.5-6.0 4.5-6.5	0.17 0.17 0.10	5	2-4
Wn----- Winooski	0-9 9-60	5-18 2-10	1.15-1.35 1.20-1.50	0.6-6.0 0.6-6.0	0.15-0.23 0.13-0.21	4.5-7.3 4.5-7.3	0.49 0.49	5	2-5

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--SOIL AND WATER FEATURES

["Flooding" and "water table" and terms such as "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					<u>Ft</u>			<u>In</u>				
AdA, AdB, AdC, AdE----- Adams	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
AgA, AgB----- Agawan	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
BdB, BdC, BdD----- Bernardston	C	None-----	---	---	1.5-2.0	Perched	Feb-Apr	>60	---	Moderate	Low-----	High.
BeB, BeC, BeD, BeE----- Bernardston	C	None-----	---	---	1.5-2.0	Perched	Feb-Apr	>60	---	Moderate	Low-----	High.
Bp*. Borochemists												
CaB*, CaC*, CaD*: Cardigan-----	B	None-----	---	---	>6.0	---	---	20-40	Hard	Moderate	Low-----	High.
Kearsarge-----	B	None-----	---	---	>6.0	---	---	10-20	Hard	Moderate	Low-----	High.
CbC*, CbD*: Cardigan-----	B	None-----	---	---	>6.0	---	---	20-40	Hard	Moderate	Low-----	High.
Kearsarge-----	B	None-----	---	---	>6.0	---	---	10-20	Hard	Moderate	Low-----	High.
Rock outcrop.												
Ch----- Chocorua	D	None-----	---	---	+1-0.5	Apparent	Jan-Dec	>60	---	High-----	Moderate	High.
CoA, CoB, CoC, CoE----- Colton	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
CyA----- Croghan	B	None-----	---	---	1.5-2.0	Apparent	Nov-May	>60	---	Moderate	Low-----	High.
DtB, DtC, DtD, DuC, DuD, DuE----- Dutchess	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Low-----	Moderate.
Gw----- Greenwood	D	Frequent----	Very long	Nov-May	+1-1.0	Apparent	Sep-Jun	>60	---	High-----	High-----	High.
Ha----- Hadley	B	Frequent----	Brief-----	Feb-Apr	4.0-6.0	Apparent	Nov-Apr	>60	---	High-----	Low-----	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth Ft	Kind	Months	Depth In	Hardness		Uncoated steel	Concrete
Hb----- Hadley	B	Occasional	Brief-----	Feb-Apr	4.0-6.0	Apparent	Nov-Apr	>60	---	High-----	Low-----	Moderate.
HcA, HcB, HcC----- Haven	B	None-----	---	---	>6.0	---	---	>60	---	Moderate	Low-----	High.
HeB, HeC, HeD, HmB, HmC, HmD----- Hermon	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
KeE*: Kearsarge-----	B	None-----	---	---	>6.0	---	---	10-20	Hard	Moderate	Low-----	High.
Cardigan----- Rock outcrop.	B	None-----	---	---	>6.0	---	---	20-40	Hard	Moderate	Low-----	High.
Lk----- Limerick	C	Frequent-----	Brief-----	Jan-Jun	0.5-1.5	Apparent	Nov-Jun	>60	---	High-----	High-----	Low.
LsE*: Lyman-----	C/D	None-----	---	---	>6.0	---	---	8-20	Hard	Moderate	Low-----	High.
Monadnock----- Rock outcrop.	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
LuA*, LyA*, LyB*: Lyme-----	C	None-----	---	---	0-1.5	Apparent	Nov-May	>60	---	High-----	Low-----	High.
Moosilauke-----	C	None-----	---	---	0-1.5	Apparent	Nov-May	>60	---	High-----	Low-----	High.
MaB, MaC, MaD, MbB, MbC, MbD, MbE----- Marlow	C	None-----	---	---	2.0-2.5	Perched	Nov-Mar	>60	---	Moderate	Low-----	Moderate.
McB, McC, McD, MfB, MfC, MfD----- Monadnock	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
MrC*, MrD*, MrE*, MuD*: Monadnock-----	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
Hermon-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
MvB*, MvC*, MvD*: Monadnock-----	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
Lyman-----	C/D	None-----	---	---	>6.0	---	---	8-20	Hard	Moderate	Low-----	High.
MwB*, MwC*, MwD*: Monadnock-----	B	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth Ft	Kind	Months	Depth In	Hardness		Uncoated steel	Concrete
MwB*, MwC*, MwD*: Lyman	C/D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	Low	High.
Rock outcrop.												
Na Naumburg	C	None	---	---	0-1.5	Apparent	Dec-Apr	>60	---	Moderate	High	High.
NnA Ninigret	B	None	---	---	1.5-3.0	Apparent	Nov-Apr	>60	---	Moderate	Low	High.
Of Ondawa	B	Occasional	Brief	Oct-Apr	>6.0	---	---	>60	---	Moderate	Low	Moderate.
Ot Ossipee	D	None	---	---	+1-0.5	Apparent	Jan-Dec	>60	---	High	Moderate	High.
PcA, PcB, PcC, PeB, PeC, PeD Peru	C	None	---	---	1.0-2.0	Perched	Nov-Apr	>60	---	High	Moderate	Moderate.
PgA, PlA, PlB Pillsbury	C	None	---	---	0-1.5	Perched	Nov-May	>60	---	High	High	High.
Pr*. Pits												
PtA, PtB, PtC, PvB, PvC Pittstown	C	None	---	---	1.5-3.0	Perched	Nov-Apr	>60	---	Moderate	Moderate	High.
Pw Podunk	B	Frequent	Brief	Nov-May	1.5-3.0	Apparent	Nov-May	>60	---	High	Moderate	Moderate.
QsC*: Quonset	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
Warwick	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
QsD Quonset	A	None	---	---	>6.0	---	---	>60	---	Low	Low	High.
Ra Raynham	C	None	---	---	0.5-2.0	Apparent	Nov-May	>60	---	High	High	Moderate.
Ro*. Rock outcrop												
Ru Rumney	C	Frequent	Brief	Oct-May	0-1.5	Apparent	Nov-Jun	>60	---	High	High	High.
Sa Saco	D	Frequent	Brief	Nov-May	0-0.5	Apparent	Sep-Jun	>60	---	High	Low	Moderate.

See footnote at end of table.

TABLE 16.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth <u>Ft</u>	Kind	Months	Depth <u>In</u>	Hardness		Uncoated steel	Concrete
Sb----- Saco Variant	D	Frequent----	Brief-----	Mar-Apr	0-0.5	Apparent	Nov-May	>60	---	High-----	Low-----	Moderate.
SdA, SdB----- Scio	B	None-----	---	---	1.5-2.0	Apparent	Mar-May	>60	---	High-----	Moderate	Moderate.
SgA, ShA, ShB----- Stissing	C	None-----	---	---	0-2.5	Perched	Oct-May	>60	---	High-----	High-----	High.
SnA, SnB, SoB, SoC----- Sunapee	E	None-----	---	---	1.5-3.0	Apparent	Nov-May	>60	---	Moderate	Low-----	High.
Su----- Sunday	A	Frequent----	Brief-----	Mar-Oct	>6.0	---	---	>60	---	Low-----	Low-----	Moderate.
Ub*. Udorthents												
UnB, UnC, UnE----- Unadilla Variant	B	None-----	---	---	>6.0	---	---	>60	---	High-----	Low-----	Moderate.
Ur*. Urban land												
WaB*: Warwick-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
Quonset-----	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
WdA, WdB, WdC, WdE----- Windsor	A	None-----	---	---	>6.0	---	---	>60	---	Low-----	Low-----	High.
Wn----- Winooski	E	Frequent----	Brief-----	Feb-Apr	1.5-3.0	Apparent	Nov-Apr	>60	---	High-----	Moderate	Moderate.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--ENGINEERING INDEX TEST DATA

[Dashes indicate data were not available. NP means nonplastic]

Soil name, report number, horizon, and depth in inches	Classification		Grain-size distribution											Liquid limit	Plasticity index
			Percentage passing sieve--								Percentage smaller than--				
	AASHTO	Unified	2 inch	3/4 inch	3/8 inch	No. 4	No. 10	No. 40	No. 200	.02 mm	.005 mm	.002 mm			
Dutchess sil:1 (S75NH2-15) B21,B22,&B3-7 to 29 C-----29 to 60	A-4 (00) A-2-4(00)	SM SM	100 98	95 86	90 77	84 68	75 59	64 44	42 30	20 12	7 2	2 1	32 28	NP NP	
Ninigret fsl:2 (S75NH2-8) B21 & B22---9 to 26 IIC-----26 to 60	A-2-4(00) A-3 (01)	SM SP-SM	100 100	100 100	100 100	100 100	100 100	96 99	23 8	4 1	1 0	1 0	<1 <1	NP NP	
Scio sil:3 (S75NH2-10) B21 & B22---10 to 30 C1-----30 to 48	A-4 (01) A-4 (00)	ML ML	100 100	100 100	100 100	100 100	100 99	99 99	93 87	43 31	12 7	5 3	30 26	NP NP	
Unadilla Variant sil:4 B21, B22, & B23-----3 to 24 C-----24 to 60	A-4 (01) A-4 (00)	ML ML	100 100	100 100	100 100	99 100	99 99	96 99	85 90	38 58	0 13	0 5	34 29	NP NP	

¹Dutchess silt loam: City of Claremont, 1,830 feet north of NH Rt. 11-103, 1.75 mi. w. of Newport-Claremont town line.

²Ninigret fine sandy loam: Town of Charlestown, 1 mi. s. of Claremont City Line, 150 ft. w. of NH Rt. 12A.

³Scio silt loam: Town of Charlestown, 1.1 mi. s. of Claremont City Line, 400 yds. sw. of NH Rt. 12A.

⁴Unadilla Variant silt loam: City of Claremont, 1-1/4 mi. e. of jct. NH Rts. 12A & 103, 175 yds. w. of Church, n. of Rt. 103.

TABLE 18.--CLASSIFICATION OF THE SOILS

[An asterisk in the first column indicates that the soil is a taxadjunct to the series. See text for a description of those characteristics of the soil that are outside the range of the series]

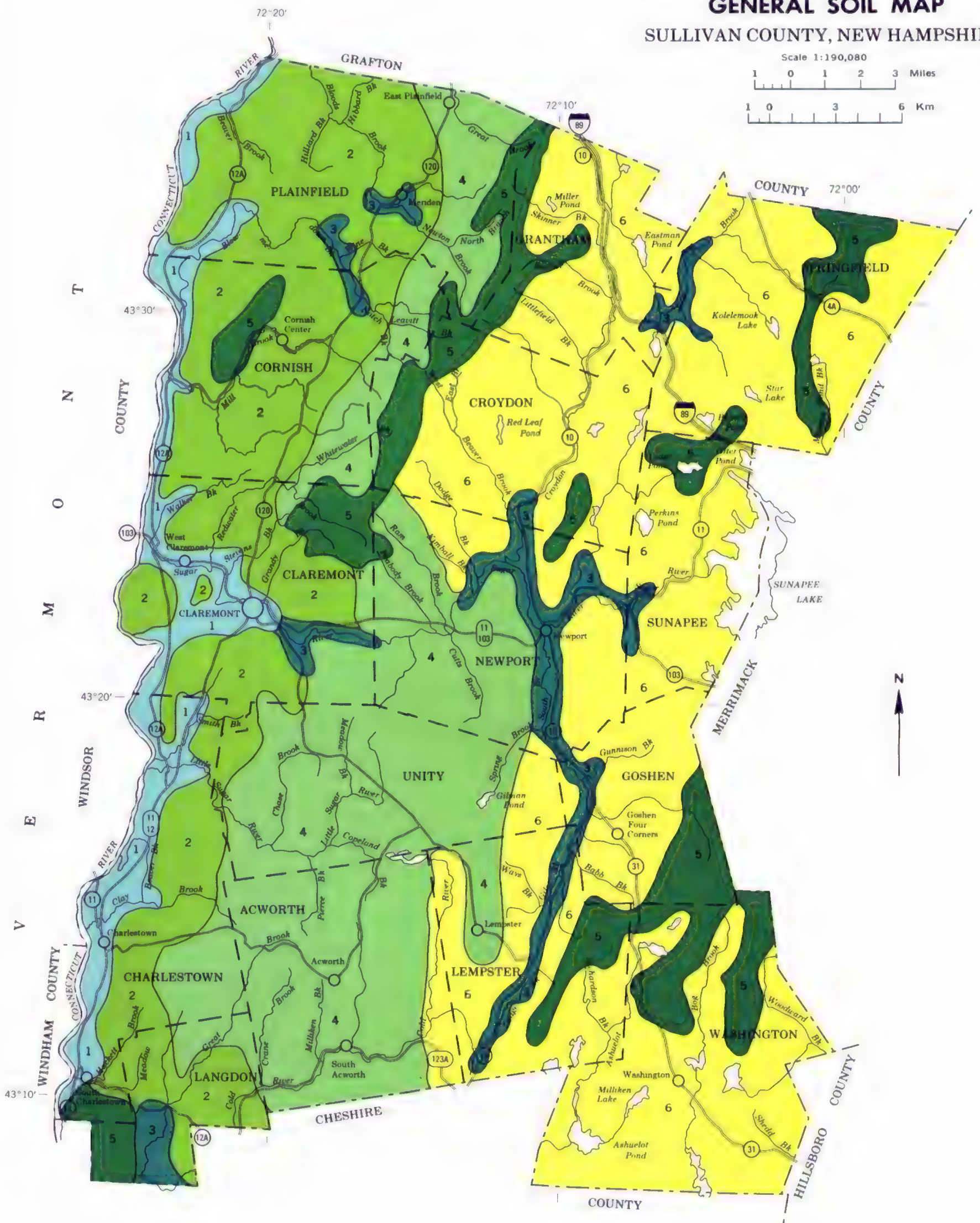
Soil name	Family or higher taxonomic class
Adams-----	Sandy, mixed, frigid Typic Haplorthods
Agawam-----	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Bernardston-----	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Borochemists-----	Borochemists
Cardigan-----	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Chocorua-----	Sandy or sandy-skeletal, mixed, dysic Terric Borochemists
Colton-----	Sandy-skeletal, mixed, frigid Typic Haplorthods
Croghan-----	Sandy, mixed, frigid Aquic Haplorthods
Dutchess-----	Coarse-loamy, mixed, mesic Typic Dystrochrepts
Greenwood-----	Dysic Typic Borochemists
Hadley-----	Coarse-silty, mixed, nonacid, mesic Typic Udifluvents
Haven-----	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Typic Dystrochrepts
Hermon-----	Sandy-skeletal, mixed, frigid Typic Haplorthods
Kearsarge-----	Loamy, mixed, mesic Lithic Dystrochrepts
Limerick-----	Coarse-silty, mixed, nonacid, mesic Typic Fluvaquents
Lyman-----	Loamy, mixed, frigid Lithic Haplorthods
Lyme-----	Coarse-loamy, mixed, acid, frigid Aerice Haplaquepts
Marlow-----	Coarse-loamy, mixed, frigid Typic Fragiochrepts
Monadnock-----	Coarse-loamy over sandy or sandy-skeletal, mixed, frigid Typic Haplorthods
Moosilauke-----	Sandy, mixed, frigid Aerice Haplaquepts
Naumburg-----	Sandy, mixed, frigid Aerice Haplaquods
Ninigret-----	Coarse-loamy over sandy or sandy-skeletal, mixed, mesic Aquic Dystrochrepts
Ondawa-----	Coarse-loamy, mixed, frigid Fluventic Dystrochrepts
Ossipee-----	Loamy, mixed, dysic Terric Borochemists
Peru-----	Coarse-loamy, mixed, frigid Aquic Fragiochrepts
Pillsbury-----	Coarse-loamy, mixed, acid, frigid Aerice Haplaquepts
Pittstown-----	Coarse-loamy, mixed, mesic Typic Fragiochrepts
Podunk-----	Coarse-loamy, mixed, frigid Fluvaquentic Dystrochrepts
Quonset-----	Sandy-skeletal, mixed, mesic Typic Udorthents
Raynham-----	Coarse-silty, mixed, nonacid, mesic Aerice Haplaquepts
*Rumney-----	Coarse-loamy, mixed, nonacid, frigid Aerice Fluvaquents
Saco-----	Coarse-silty, mixed, nonacid, mesic Fluvaquentic Humaquepts
Saco Variant-----	Coarse silty over sandy or sandy skeletal, mixed, nonacid, frigid Fluvaquentic Humaquepts
Scio-----	Coarse-silty, mixed, mesic Aquic Dystrochrepts
*Stissing-----	Coarse-loamy, mixed, mesic Aerice Fragiaquepts
Sunapee-----	Coarse-loamy, mixed, frigid Aquic Haplorthods
Sunday-----	Mixed, frigid Typic Udipsamments
Udorthents-----	Udorthents
Unadilla Variant-----	Coarse-silty, mixed, mesic Typic Dystrochrepts
Warwick-----	Loamy-skeletal, mixed, mesic Typic Dystrochrepts
Windsor-----	Mixed, mesic Typic Udipsamments
Winooski-----	Coarse-silty, mixed, nonacid, mesic Aquic Udifluvents

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U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NEW HAMPSHIRE AGRICULTURAL EXPERIMENT STATION
GENERAL SOIL MAP
SULLIVAN COUNTY, NEW HAMPSHIRE

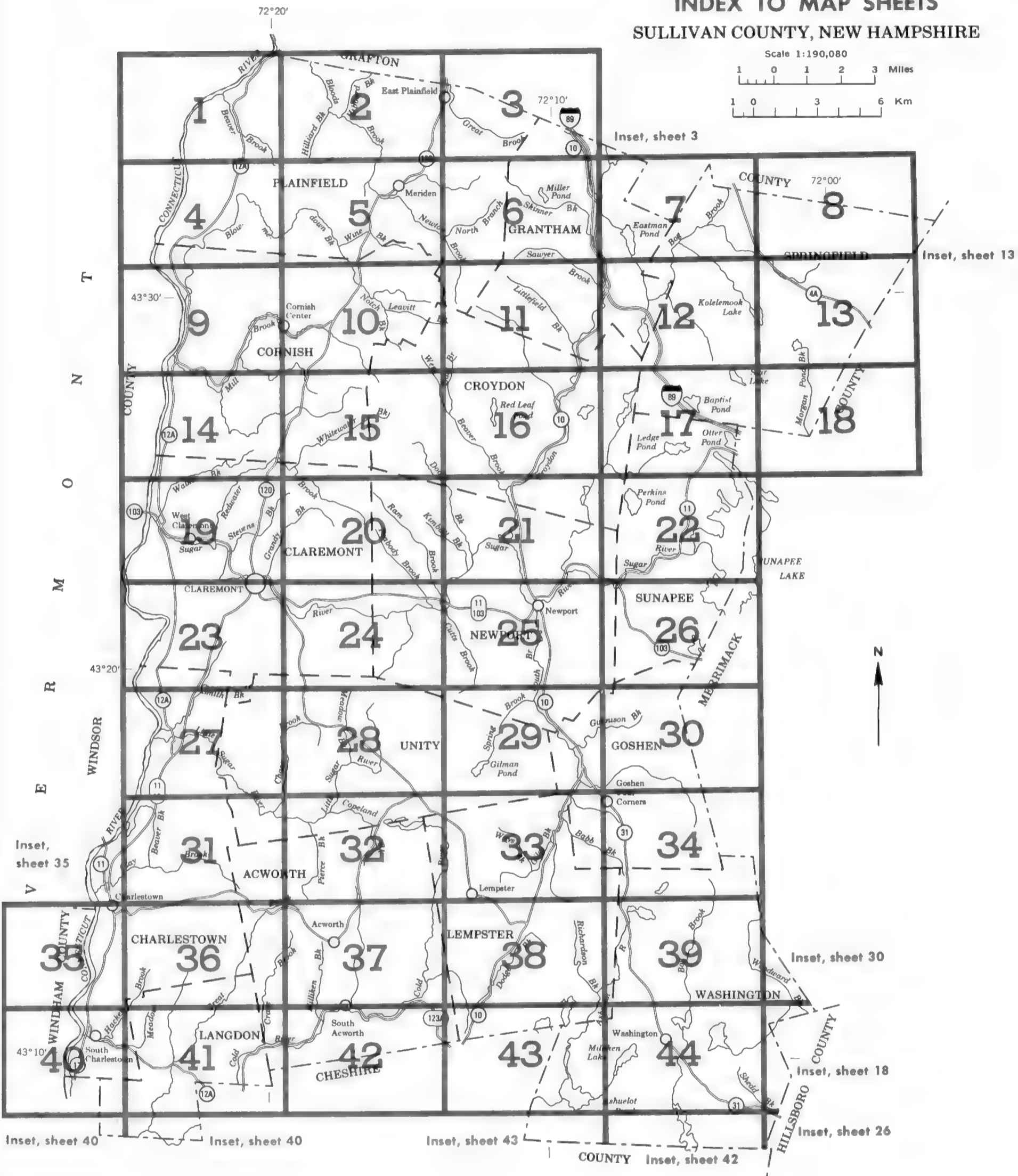


LEGEND *

- | | |
|---|--|
| 1 WINDSOR-UNADILLA VARIANT-AGAWAM: Deep, nearly level to very steep, excessively drained and well drained, sandy and loamy soils formed in glacial outwash deposits | 4 MONADNOCK-MARLOW-LYMAN: Deep and shallow, gently sloping to very steep, well drained and somewhat excessively drained, loamy soils formed in glacial till |
| 2 BERNARDSTON-CARDIGAN-KEARSARGE-DUTCHESS: Deep, moderately deep, and shallow, gently sloping to very steep, well drained and somewhat excessively drained, loamy soils formed in glacial till | 5 MONADNOCK-LYMAN-ROCK OUTCROP: Deep and shallow, moderately steep to very steep, well drained and somewhat excessively drained, loamy soils formed in glacial till |
| 3 COLTON-ADAMS-RUMNEY: Deep, nearly level to very steep, excessively drained and poorly drained, loamy and sandy soils formed in glacial outwash deposits and alluvium | 6 MONADNOCK-MARLOW-HERMON: Deep, gently sloping to very steep, well drained and somewhat excessively drained, loamy and sandy soils formed in glacial till |

* The texture given in each descriptive heading refers to the texture of the surface layer of the major soils in that unit.

INDEX TO MAP SHEETS SULLIVAN COUNTY, NEW HAMPSHIRE



Original text from each individual map sheet read:
This map is compiled on 1976 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

SOIL LEGEND

Publication symbols consist of letters. The first letter, always a capital, is the initial letter of the soil name. The second letter in each symbol is always a lower case letter. The third letter, if used, is a capital and connotes slope class. Symbols without a slope letter are for nearly level soils, soils named for higher categories, or miscellaneous areas.

SYMBOL	NAME	SYMBOL	NAME
AdA	Adams loamy sand, 0 to 3 percent slopes	MfD	Monadnock stony fine sandy loam, 15 to 25 percent slopes
AdB	Adams loamy sand, 3 to 8 percent slopes	MrC	Monadnock-Hermon association, very stony, sloping
AdC	Adams loamy sand, 8 to 15 percent slopes	MrD	Monadnock-Hermon association, very stony, moderately steep
AdE	Adams loamy sand, 15 to 50 percent slopes	MrE	Monadnock-Hermon association, very stony, steep
AgA	Agawam very fine sandy loam, 0 to 3 percent slopes	MuD	Monadnock-Hermon association, extremely bouldery, moderately steep
AgB	Agawam very fine sandy loam, 3 to 8 percent slopes	MvB	Monadnock-Lyman stony fine sandy loams, 3 to 8 percent slopes
		MvC	Monadnock-Lyman stony fine sandy loams, 8 to 15 percent slopes
BdB	Bernardston silt loam, 3 to 8 percent slopes	MvD	Monadnock-Lyman stony fine sandy loams, 15 to 25 percent slopes
BdC	Bernardston silt loam, 8 to 15 percent slopes	MwB	Monadnock-Lyman-Rock outcrop complex, 3 to 8 percent slopes
BdD	Bernardston silt loam, 15 to 25 percent slopes	MwC	Monadnock-Lyman-Rock outcrop complex, 8 to 15 percent slopes
BeB	Bernardston stony silt loam, 3 to 8 percent slopes	MwD	Monadnock-Lyman-Rock outcrop complex, 15 to 25 percent slopes
BeC	Bernardston stony silt loam, 8 to 15 percent slopes		
BeD	Bernardston stony silt loam, 15 to 25 percent slopes	Na	Naumburg loamy sand
BeE	Bernardston stony silt loam, 25 to 50 percent slopes	NnA	Ninigret fine sandy loam, 0 to 5 percent slopes
Bp	Borohemists, ponded		
		Ot	Ondawa fine sandy loam
CaB	Cardigan-Kearsarge silt loams, 3 to 8 percent slopes	Ot	Ossipee mucky peat
CaC	Cardigan-Kearsarge silt loams, 8 to 15 percent slopes		
CaD	Cardigan-Kearsarge silt loams, 15 to 25 percent slopes	PcA	Peru loam, 0 to 3 percent slopes
CbC	Cardigan-Kearsarge-Rock outcrop complex, 8 to 15 percent slopes	PcB	Peru loam, 3 to 8 percent slopes
CbD	Cardigan-Kearsarge-Rock outcrop complex, 15 to 25 percent slopes	PcC	Peru loam, 8 to 15 percent slopes
Ch	Chocoma mucky peat	PeB	Peru stony loam, 0 to 8 percent slopes
CoA	Colton sandy loam, 0 to 3 percent slopes	PeC	Peru stony loam, 8 to 15 percent slopes
CoB	Colton sandy loam, 3 to 8 percent slopes	PeD	Peru stony loam, 15 to 25 percent slopes
CoC	Colton sandy loam, 8 to 15 percent slopes	PgA	Pillsbury loam, 0 to 3 percent slopes
CoE	Colton sandy loam, 15 to 50 percent slopes	PIA	Pillsbury stony loam, 0 to 3 percent slopes
CyA	Croghan loamy fine sand, 0 to 5 percent slopes	PIB	Pillsbury stony loam, 3 to 8 percent slopes
		Pr	Pitts, gravel
DtB	Dutchess silt loam, 3 to 8 percent slopes	PIA	Pittstown silt loam, 0 to 3 percent slopes
DtC	Dutchess silt loam, 8 to 15 percent slopes	PtB	Pittstown silt loam, 3 to 8 percent slopes
DtD	Dutchess silt loam, 15 to 25 percent slopes	PtC	Pittstown silt loam, 8 to 15 percent slopes
DuC	Dutchess stony silt loam, 8 to 15 percent slopes	PvB	Pittstown stony silt loam, 3 to 8 percent slopes
DuD	Dutchess stony silt loam, 15 to 25 percent slopes	PvC	Pittstown stony silt loam, 8 to 15 percent slopes
DuE	Dutchess stony silt loam, 25 to 50 percent slopes	Pw	Podunk fine sandy loam
Gw	Greenwood mucky peat	QsC	Quonset-Warwick gravelly fine sandy loams, 8 to 15 percent slopes
		QsD	Quonset gravelly fine sandy loam, 15 to 35 percent slopes
Ha	Hadley silt loam, frequently flooded		
Hb	Hadley silt loam, occasionally flooded	Ra	Raynham silt loam
HcA	Haven very fine sandy loam, 0 to 3 percent slopes	Ro	Rock outcrop
HcB	Haven very fine sandy loam, 3 to 8 percent slopes	Ru	Rumney loam
HcC	Haven very fine sandy loam, 8 to 15 percent slopes		
HeB	Hermon fine sandy loam, 3 to 8 percent slopes	Sa	Saco silt loam
HeC	Hermon fine sandy loam, 8 to 15 percent slopes	Sb	Saco Variant mucky silt loam
HeD	Hermon fine sandy loam, 15 to 25 percent slopes	SdA	Scio silt loam, 0 to 3 percent slopes
HmB	Hermon stony fine sandy loam, 3 to 8 percent slopes	SdB	Scio silt loam, 3 to 8 percent slopes
HmC	Hermon stony fine sandy loam, 8 to 15 percent slopes	SgA	Stissing silt loam, 0 to 5 percent slopes
HmD	Hermon stony fine sandy loam, 15 to 25 percent slopes	ShA	Stissing stony silt loam, 0 to 3 percent slopes
		ShB	Stissing stony silt loam, 3 to 8 percent slopes
KeE	Kearsarge-Cardigan-Rock outcrop complex, 25 to 50 percent slopes	SnA	Sunapee fine sandy loam, 0 to 3 percent slopes
		SnB	Sunapee fine sandy loam, 3 to 8 percent slopes
Lk	Limerick silt loam	SoB	Sunapee stony fine sandy loam, 3 to 8 percent slopes
LsE	Lyman-Monadnock-Rock outcrop complex, 25 to 50 percent slopes	SoC	Sunapee stony fine sandy loam, 8 to 15 percent slopes
LuA	Lyme-Moosilauke loams, 0 to 3 percent slopes	Su	Sunday loamy sand
LyA	Lyme-Moosilauke stony loams, 0 to 3 percent slopes		
LyB	Lyme-Moosilauke stony loams, 3 to 8 percent slopes	Ub	Udorthents, smoothed
		UnB	Unadilla Variant silt loam, 3 to 8 percent slopes
MaB	Marlow loam, 3 to 8 percent slopes	UnC	Unadilla Variant silt loam, 8 to 15 percent slopes
MaC	Marlow loam, 8 to 15 percent slopes	UnE	Unadilla Variant silt loam, 15 to 50 percent slopes
MaD	Marlow loam, 15 to 25 percent slopes	Ur	Urban land
MaB	Marlow stony loam, 3 to 8 percent slopes		
MaC	Marlow stony loam, 8 to 15 percent slopes	WaB	Warwick-Quonset gravelly fine sandy loams, 3 to 8 percent slopes
MaD	Marlow stony loam, 15 to 25 percent slopes	WdA	Windsor loamy sand, 0 to 3 percent slopes
MaE	Marlow stony loam, 25 to 50 percent slopes	WdB	Windsor loamy sand, 3 to 8 percent slopes
McB	Monadnock fine sandy loam, 3 to 8 percent slopes	WdC	Windsor loamy sand, 8 to 15 percent slopes
McC	Monadnock fine sandy loam, 8 to 15 percent slopes	WdE	Windsor loamy sand, 15 to 50 percent slopes
McD	Monadnock fine sandy loam, 15 to 25 percent slopes	Wn	Winooski silt loam
MfB	Monadnock stony fine sandy loam, 3 to 8 percent slopes	W	Water
MfC	Monadnock stony fine sandy loam, 8 to 15 percent slopes		

CONVENTIONAL AND SPECIAL
SYMBOLS LEGEND

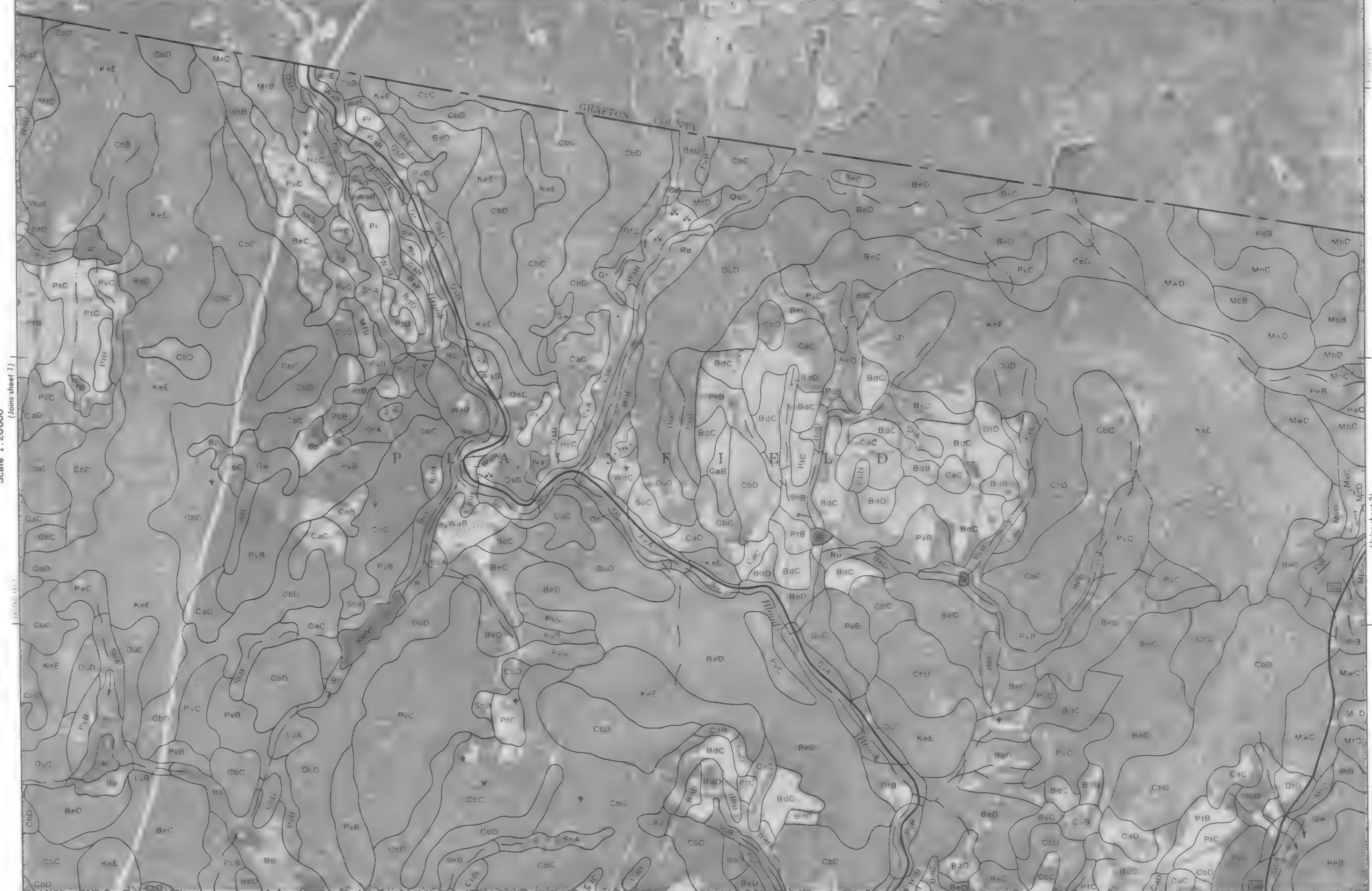
CULTURAL FEATURES

BOUNDARIES	
National, state or province	
County or parish	
Minor civil division	
Reservation (national forest or park, state forest or park, and large airport)	
Land grant	
Limit of soil survey (label)	
Field sheet matchline & neatline	
AD HOC BOUNDARY (label)	
Small airport, airfield, park, oilfield cemetery, or flood pool	
STATE COORDINATE TICK	
LAND DIVISION CORNERS (sections and land grants)	
ROADS	
Divided (median shown if scale permits)	
Other roads	
Trail	
ROAD EMBLEM & DESIGNATIONS	
Interstate	
Federal	
State	
County, farm or ranch	
RAILROAD	
POWER TRANSMISSION LINE (normally not shown)	
PIPE LINE (normally not shown)	
FENCE (normally not shown)	
LEVEES	
Without road	
With road	
With railroad	
DAMS	
Large (to scale)	
Medium or small	
PITS	
Gravel pit	
Mine or quarry	

MISCELLANEOUS CULTURAL FEATURES	
Farmstead, house (omit in urban areas)	
Church	
School	
Indian mound (label)	
Located object (label)	
Tank (label)	
Wells, oil or gas	
Windmill	
Kitchen midden	
DRAINAGE	
Perennial, double line	
Perennial, single line	
Intermittent	
Drainage end	
Canals or ditches	
Double-line (label)	
Drainage and/or irrigation	
LAKES, PONDS AND RESERVOIRS	
Perennial	
Intermittent	
MISCELLANEOUS WATER FEATURES	
Marsh or swamp	
Spring	
Well, artesian	
Well, irrigation	
Wet spot	

SPECIAL SYMBOLS FOR
SOIL SURVEY

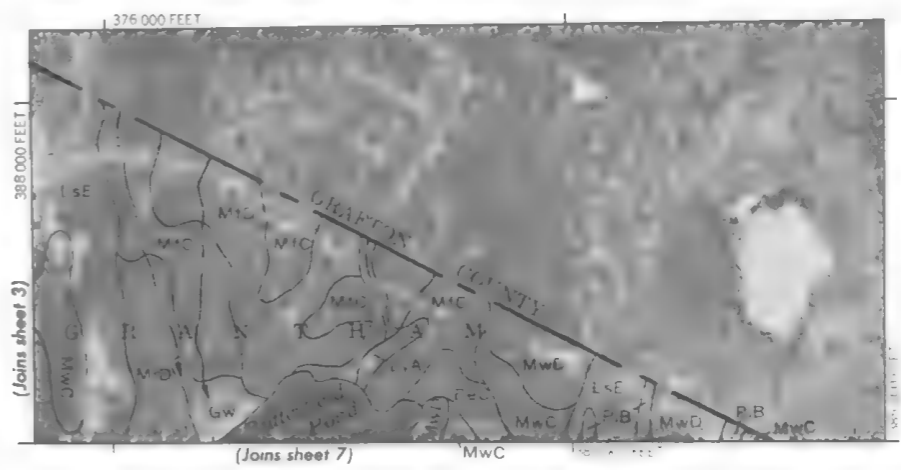
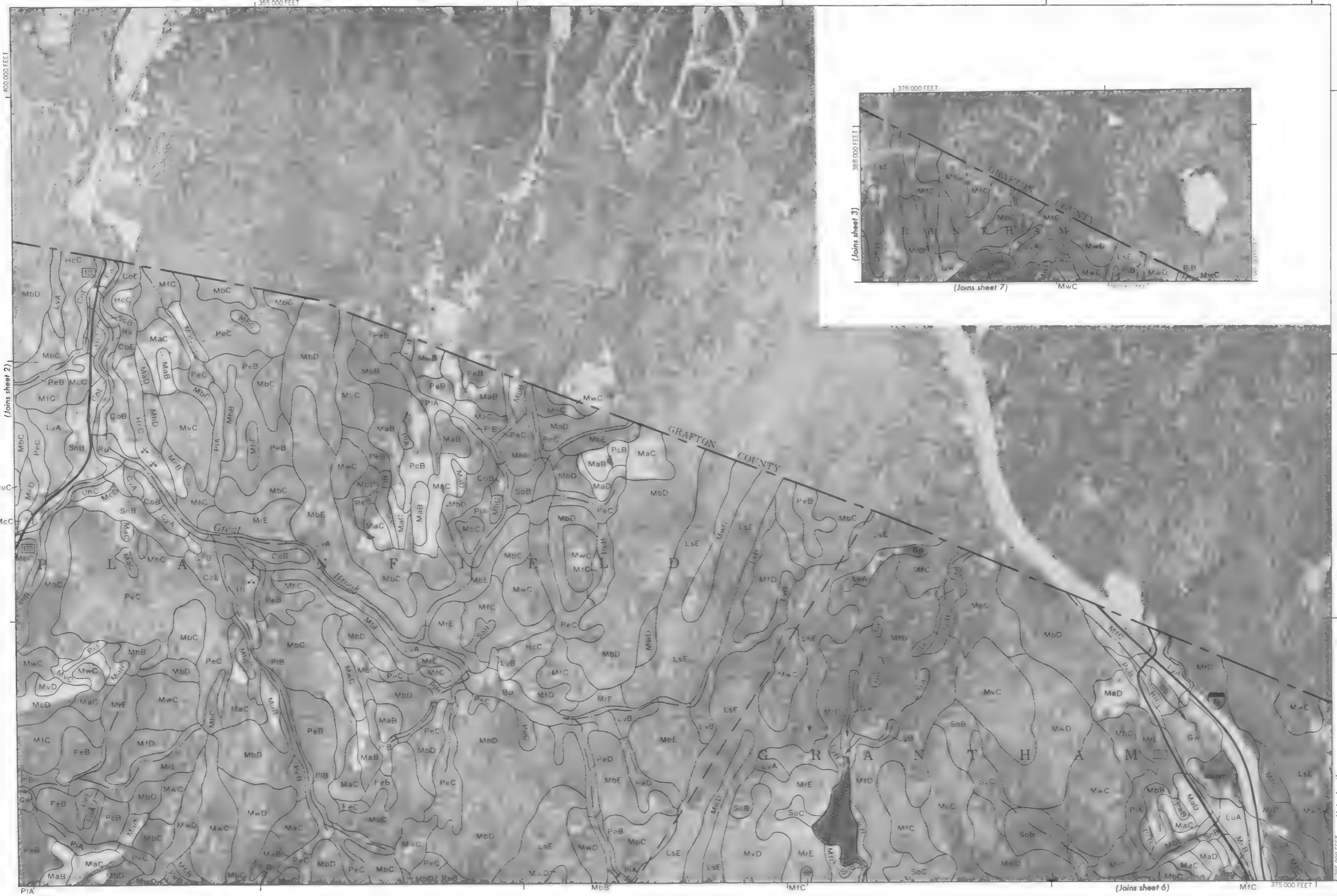
SOIL DELINEATIONS AND SYMBOLS	
ESCARPMENTS	
Bedrock (points down slope)	
Other than bedrock (points down slope)	
SHORT STEEP SLOPE	
GULLY	
DEPRESSION OR SINK	
SOIL SAMPLE SITE (normally not shown)	
MISCELLANEOUS	
Bowout	
Clay spot	
Gravelly spot	
Gumbo, slick or scabby spot (sodic)	
Dumps and other similar non soil areas	
Prominent hill or peak	
Rock outcrop (includes sandstone and shale)	
Saline spot	
Sandy spot	
Severely eroded spot	
Slide or slip (tips point upslope)	
Stony spot, very stony spot	
River wash	

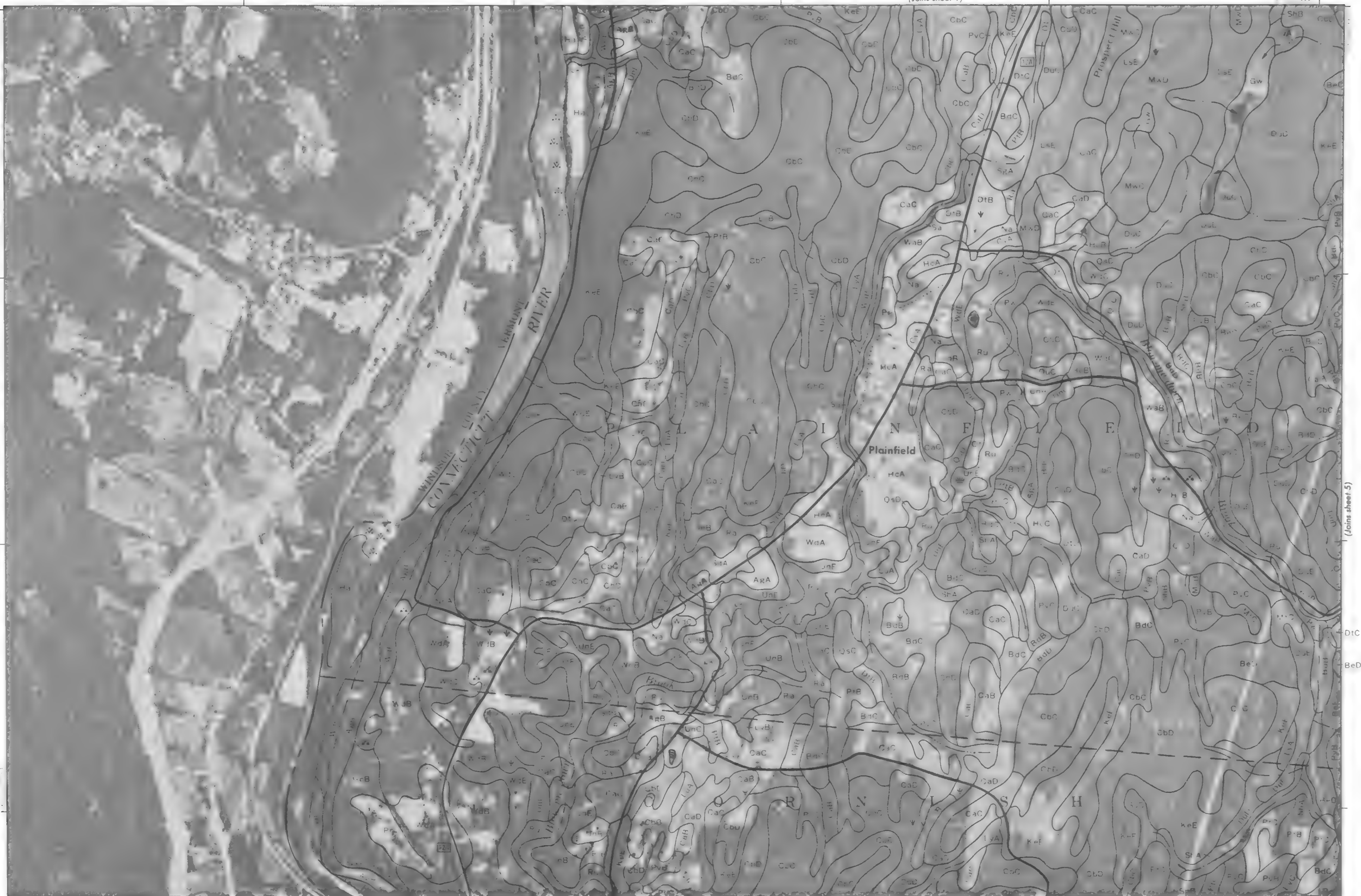
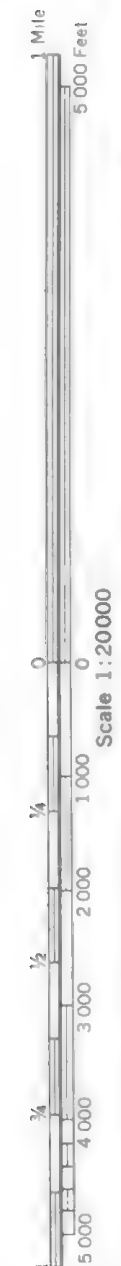


(Join sheet 5)

330,000 FEET

(Join sheet 3)



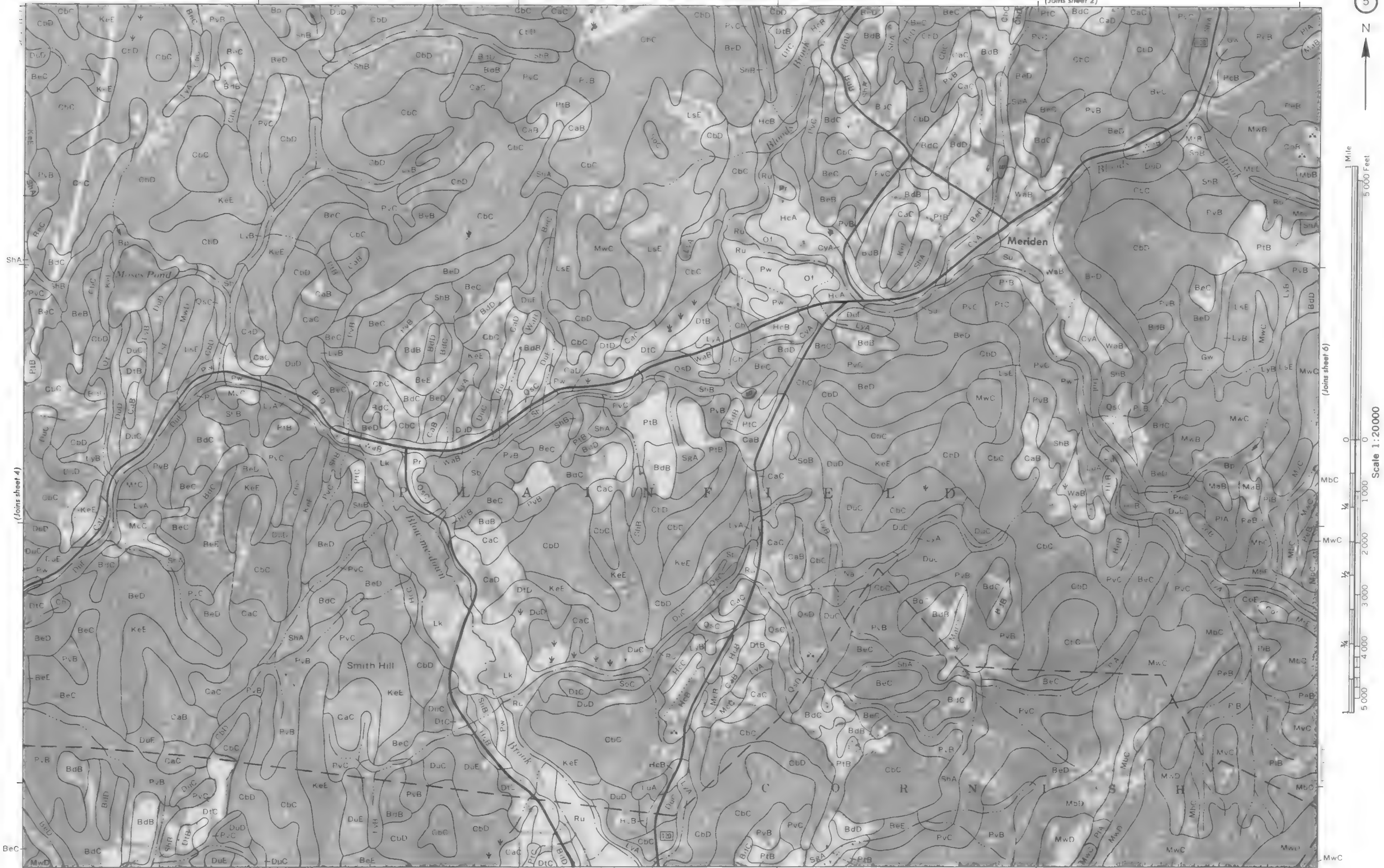


(Joins sheet 5)

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BeC

(Joins sheet 9)

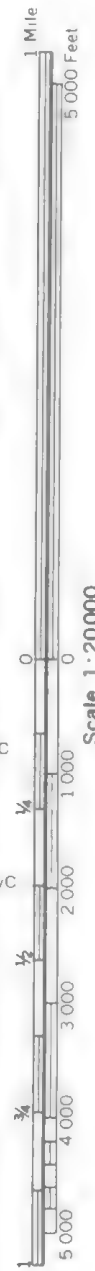


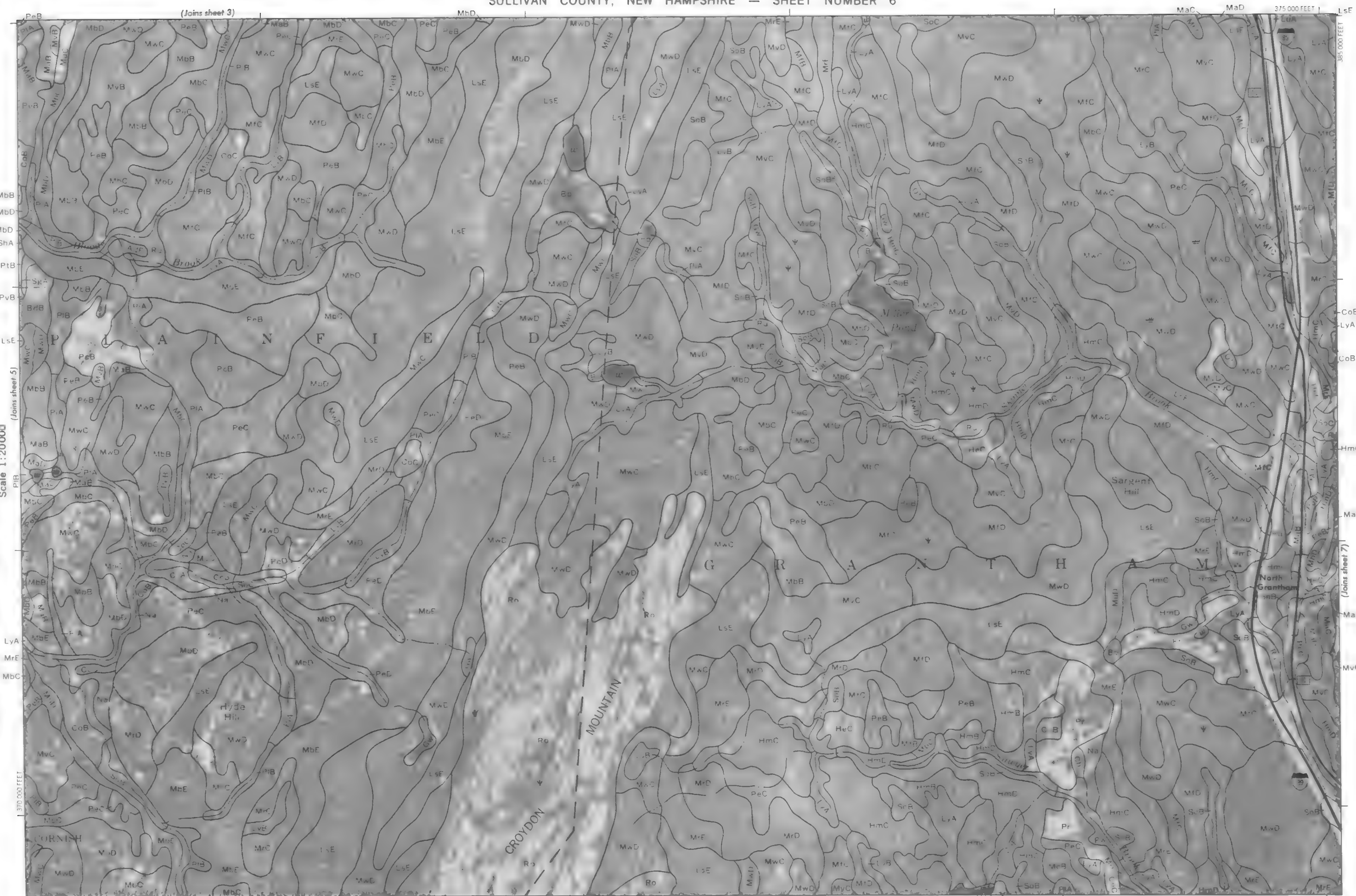
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(Joins sheet 6)

(Joins sheet 10)

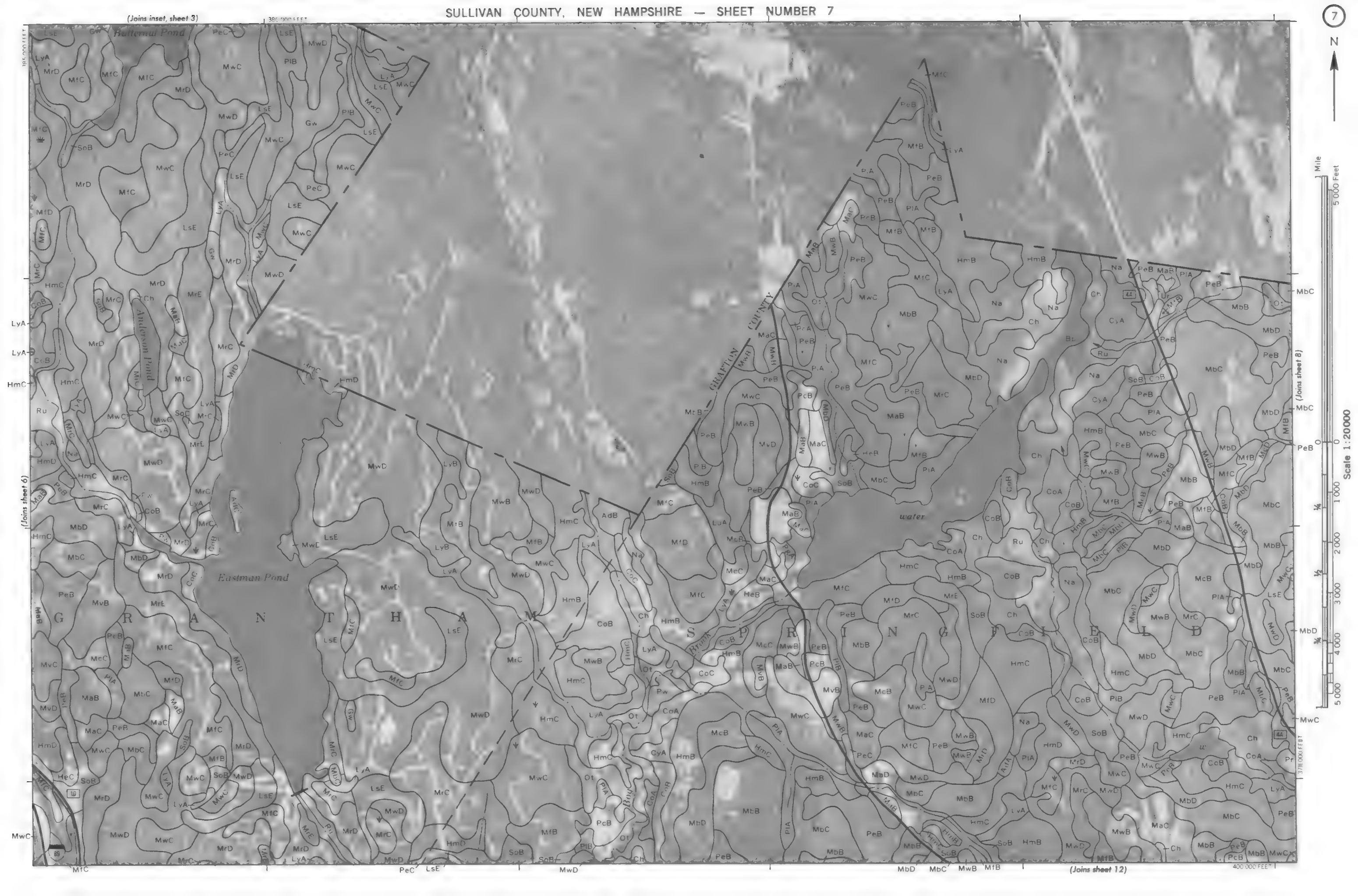
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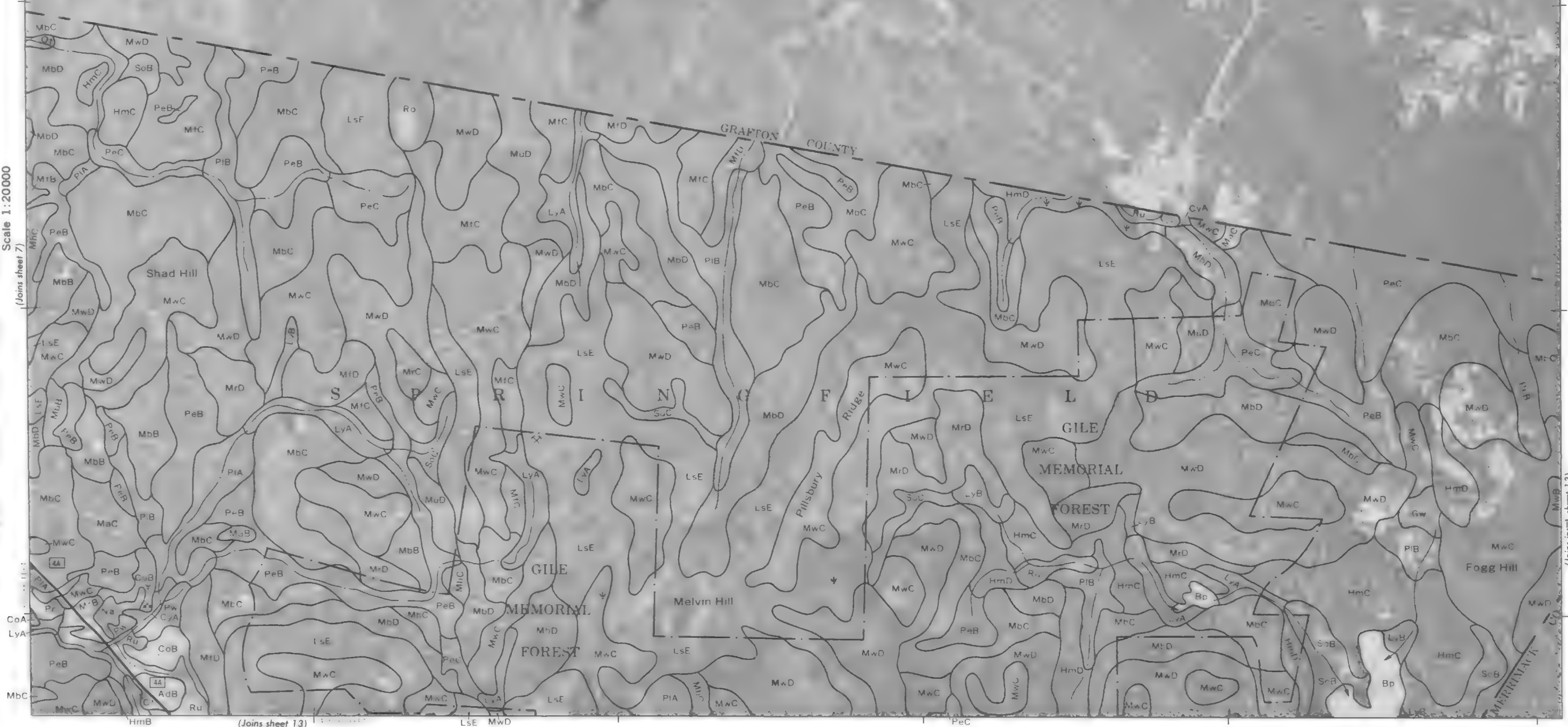




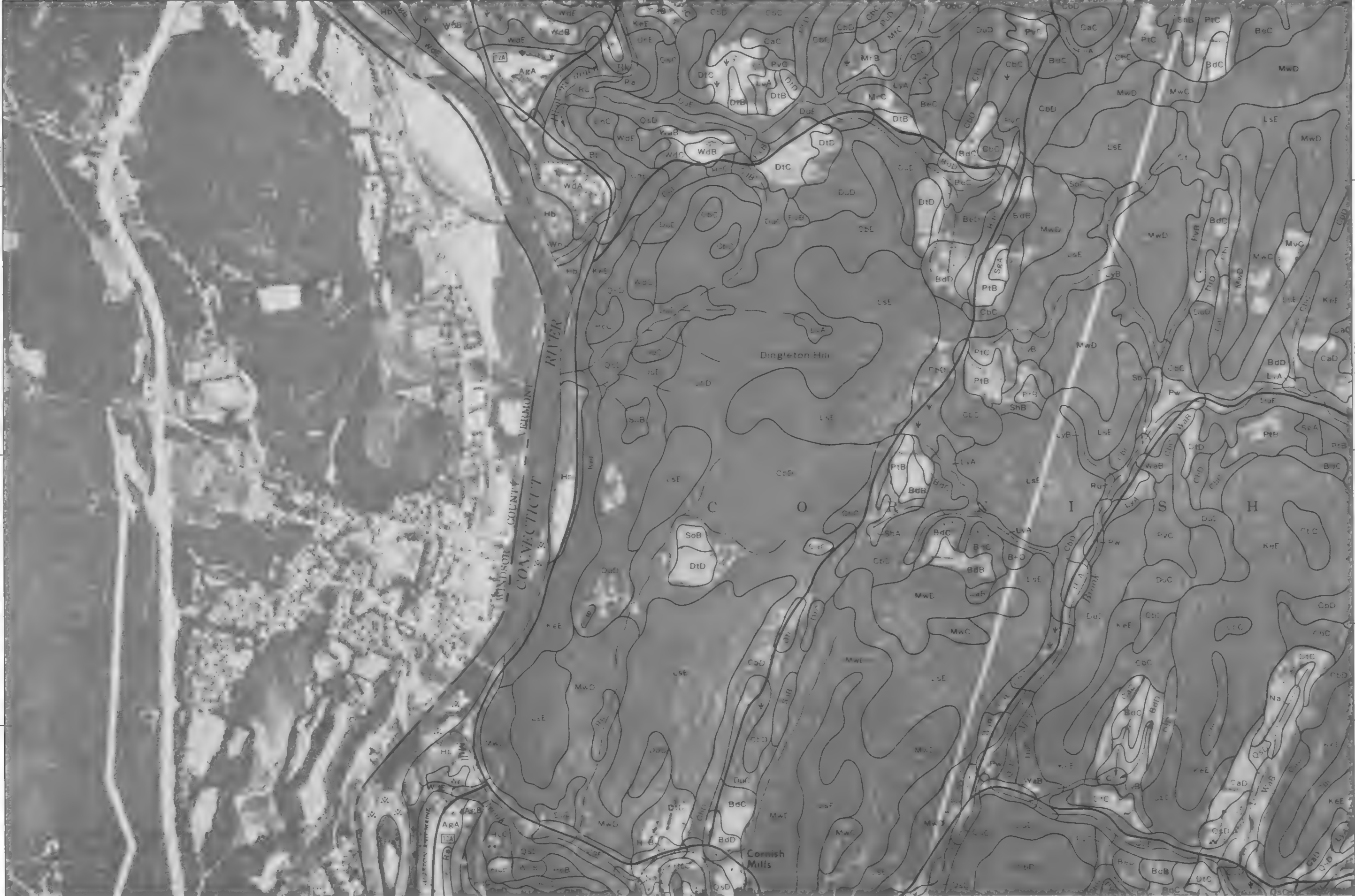
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$$\text{CoC}$$





305,000 FEET

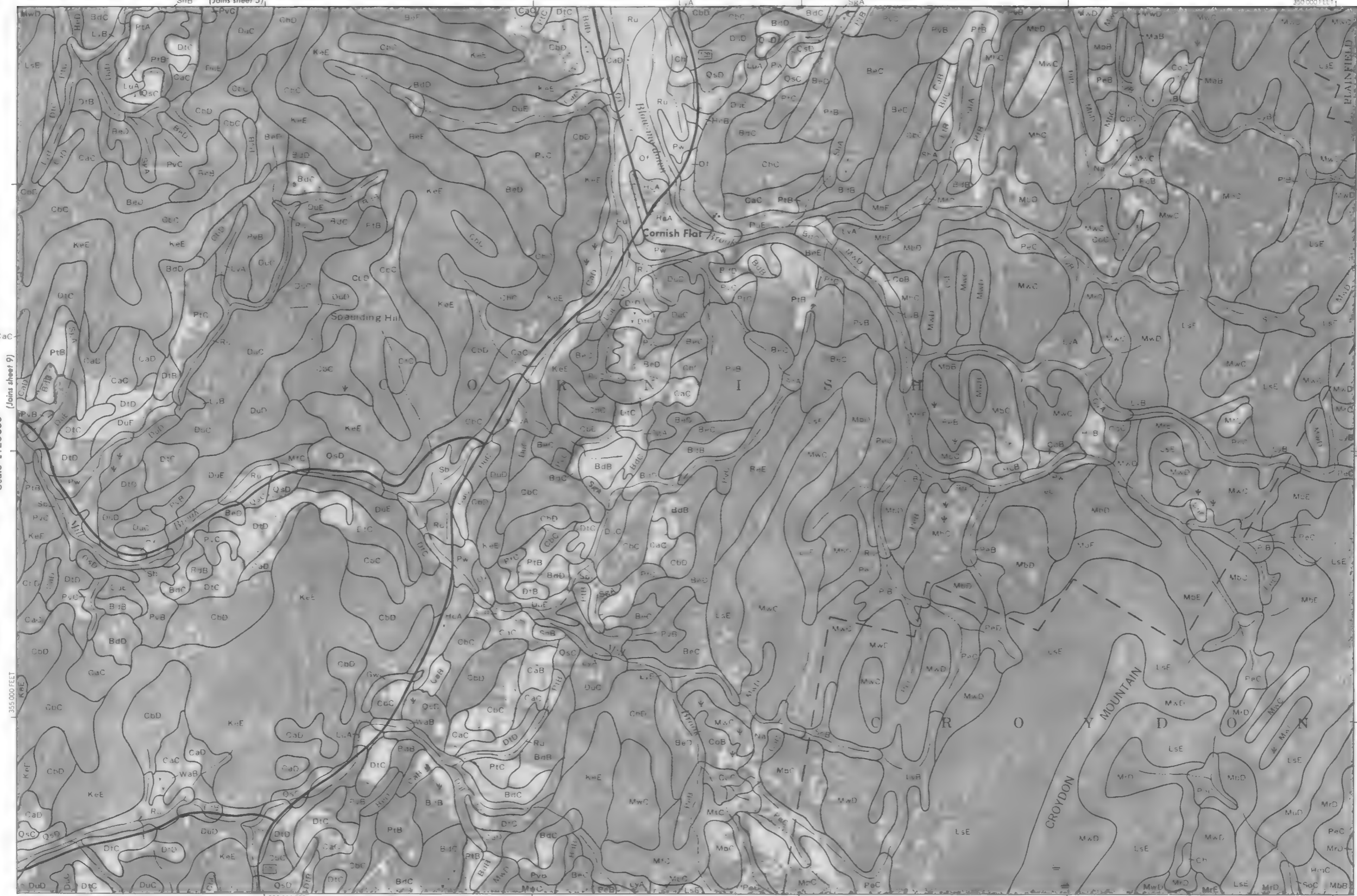


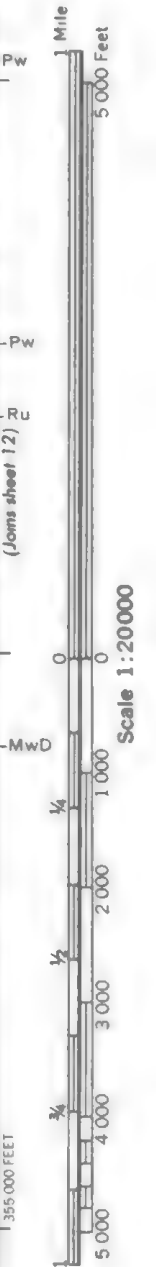
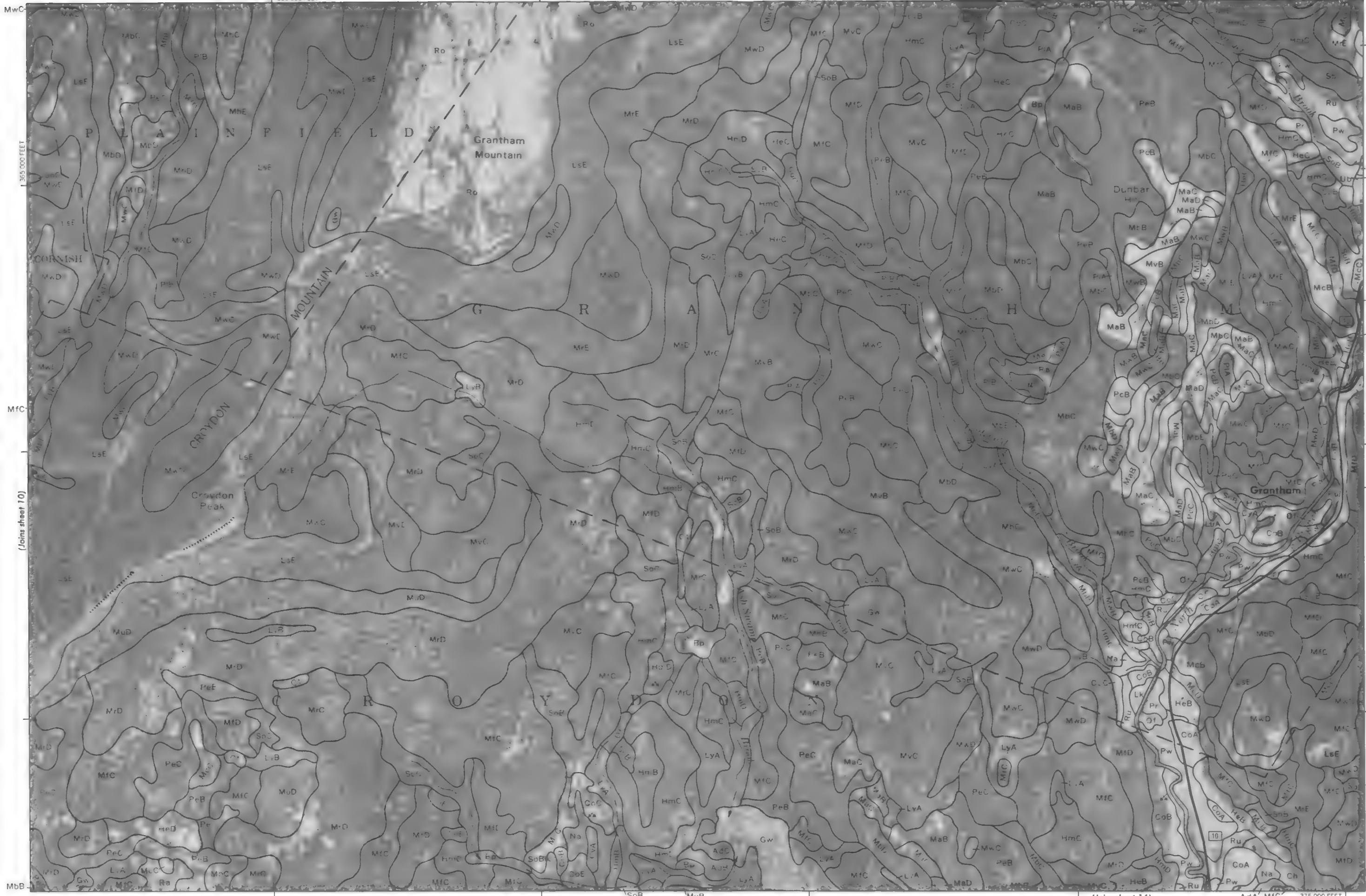
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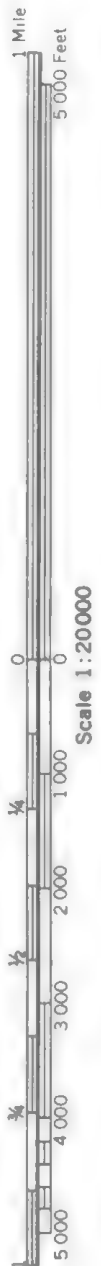
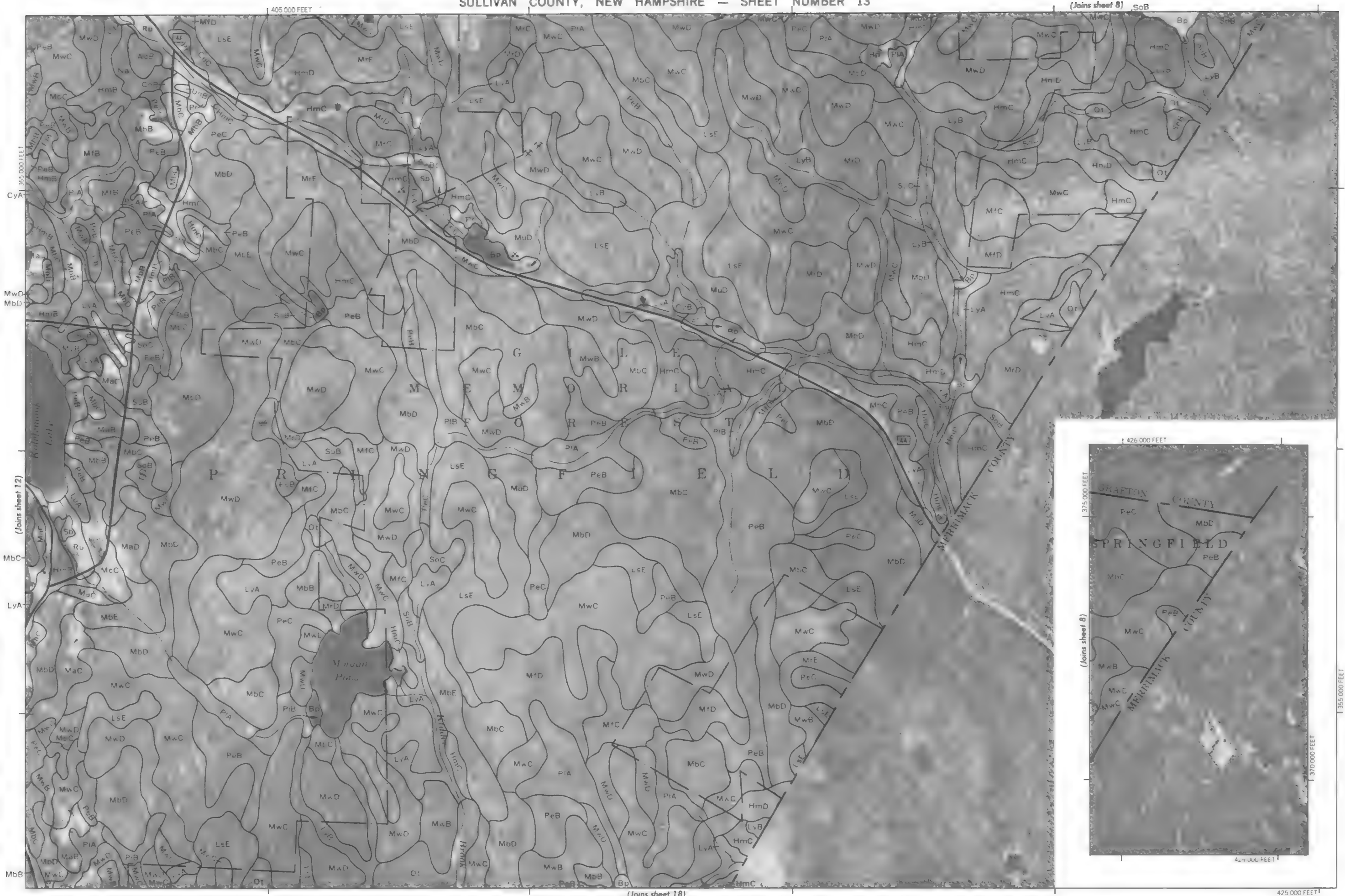
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305,000 FEET

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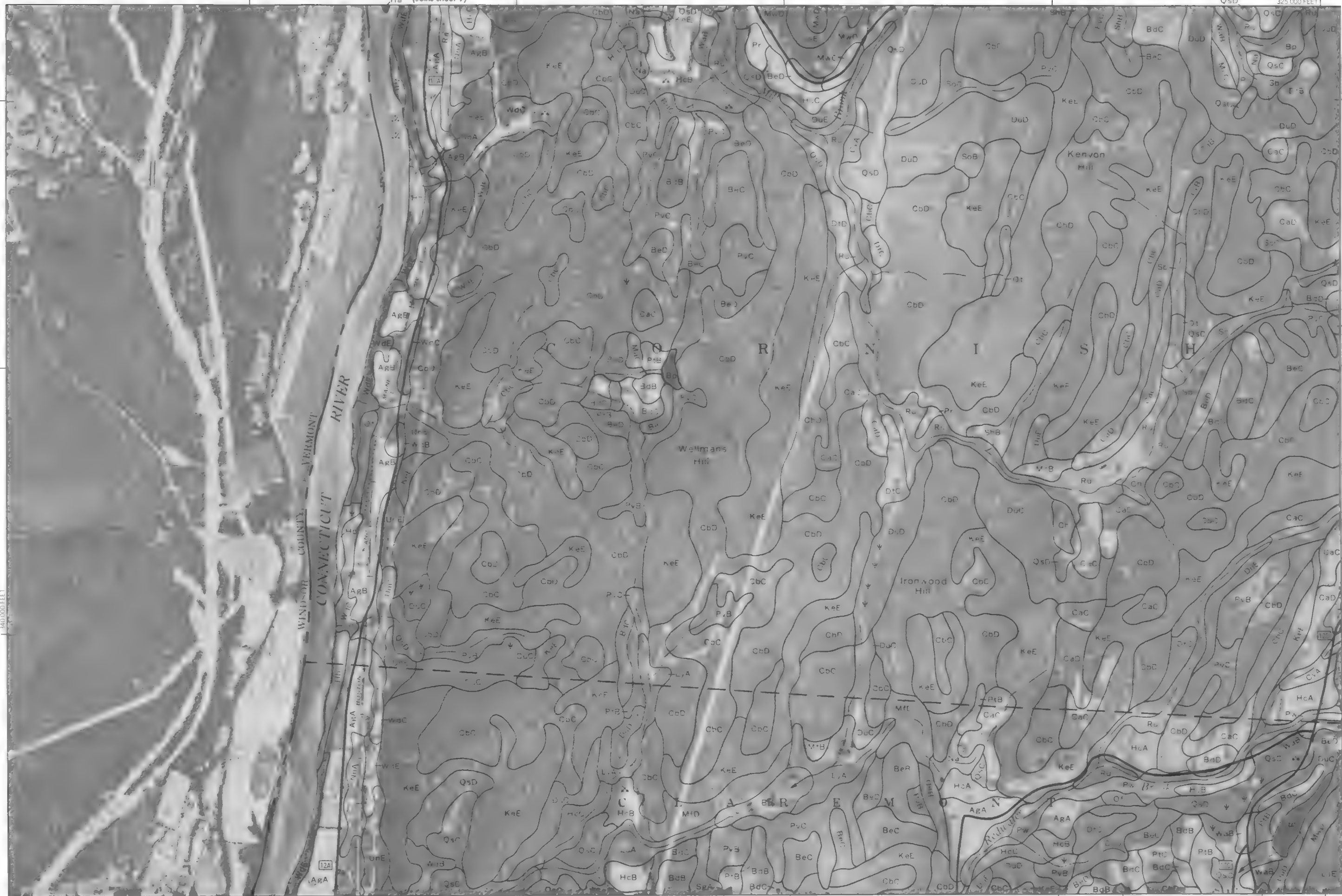




Scale 1:20000



Scale 1:20000



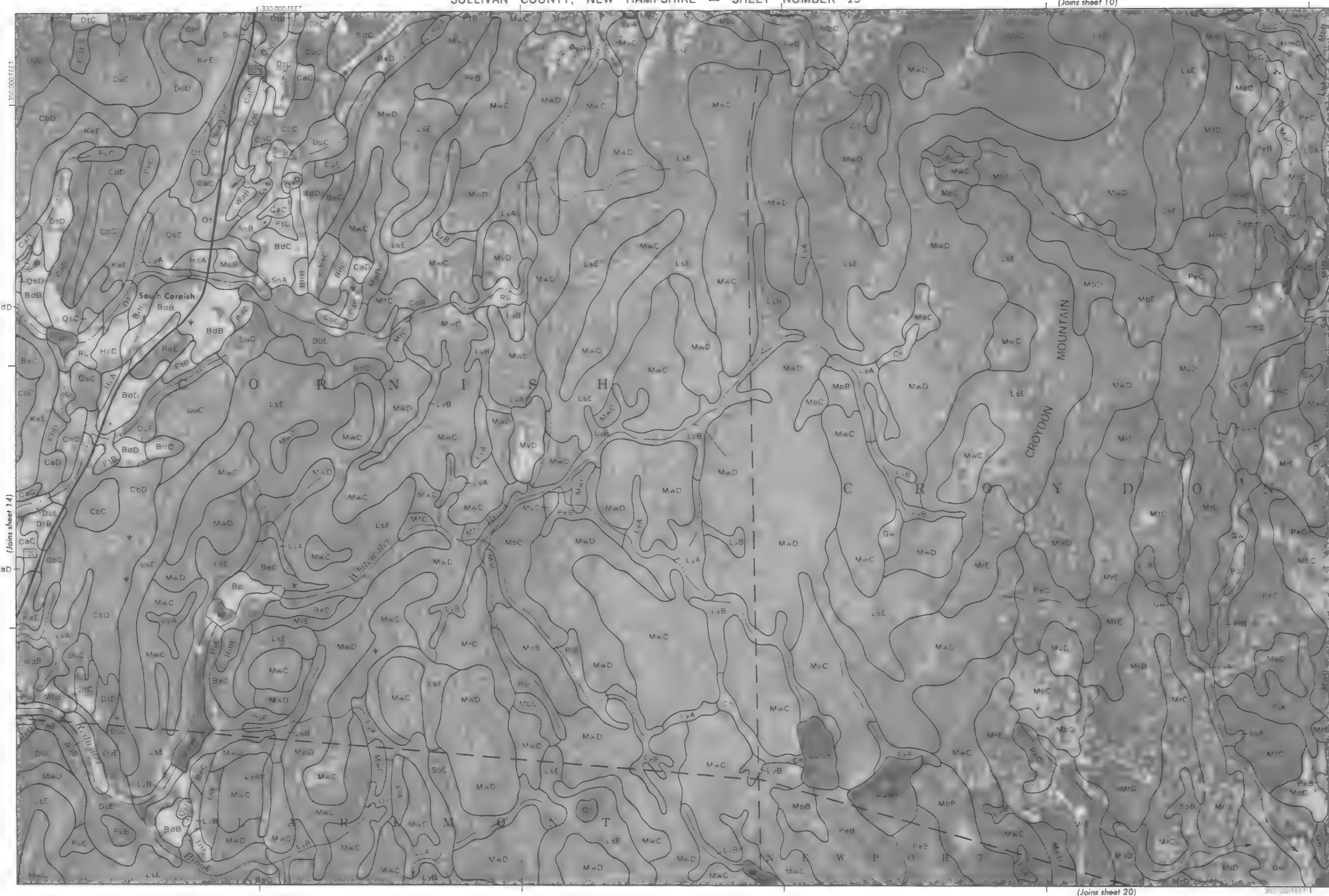
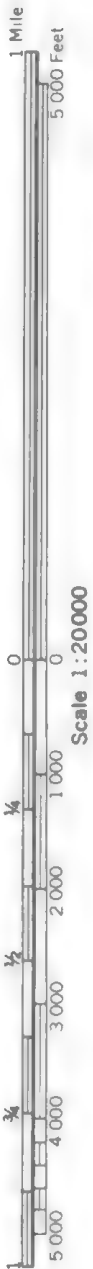
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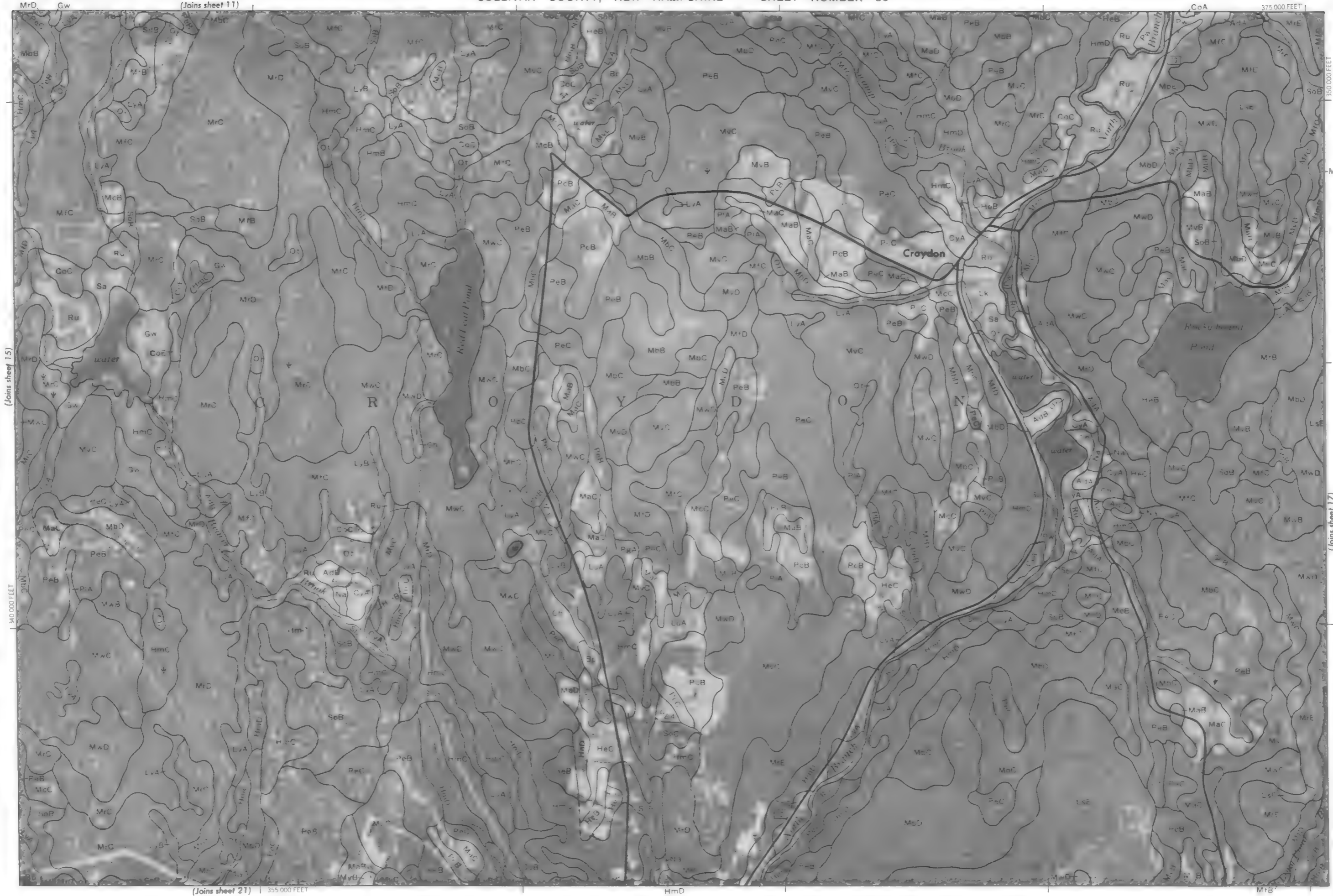
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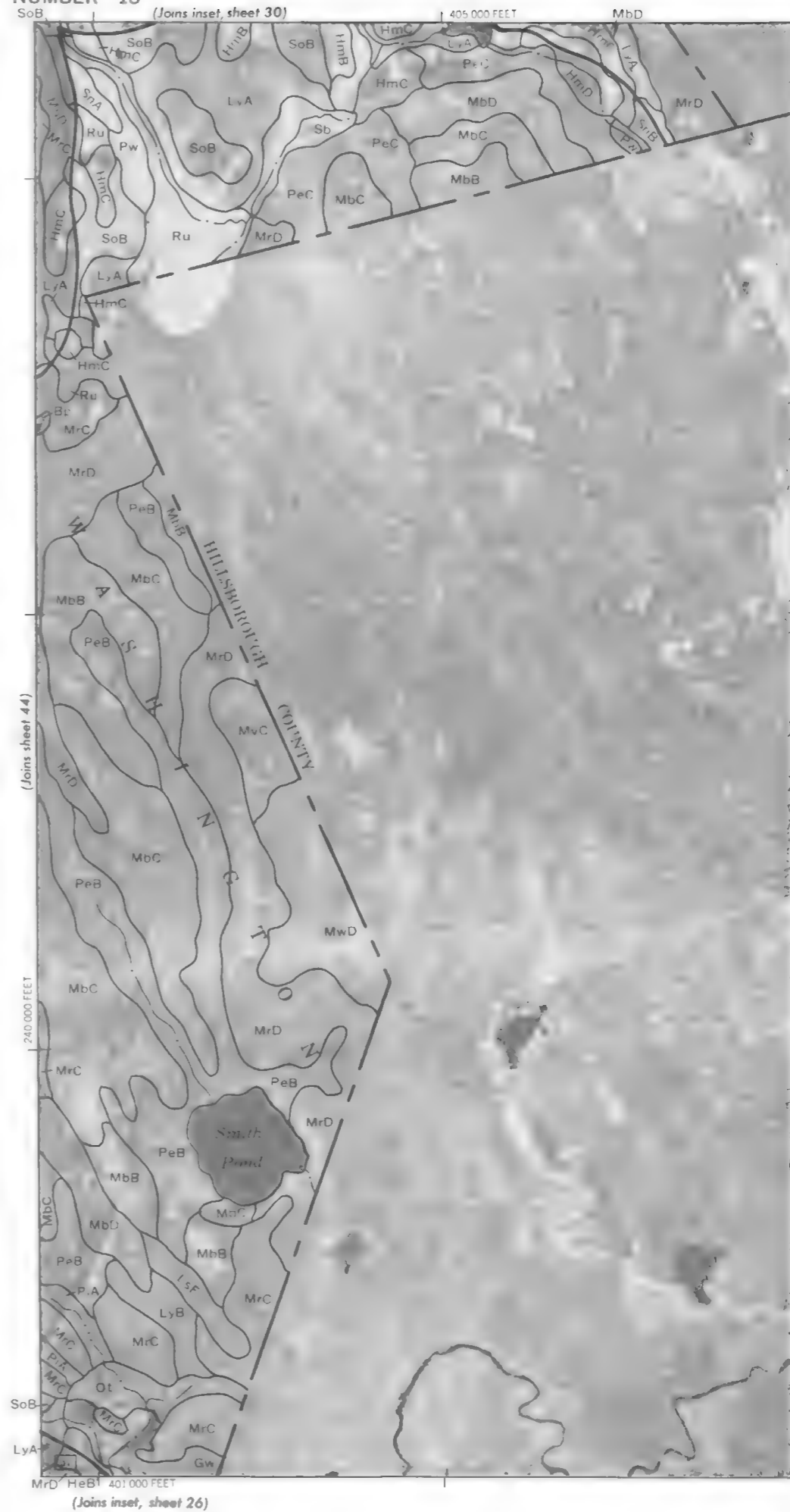
MfC

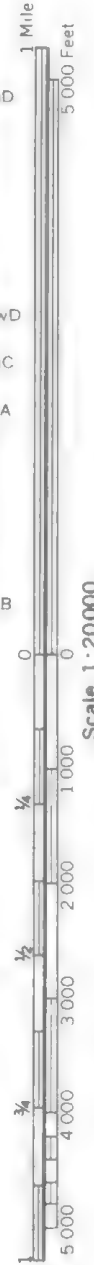
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Scale 1:20000

0

1000

2000

3000

4000

5000

0

1

Mile

5000 Feet

0

1000

2000

3000

4000

5000

0

1

Mile

5000 Feet

0

1000

2000

3000

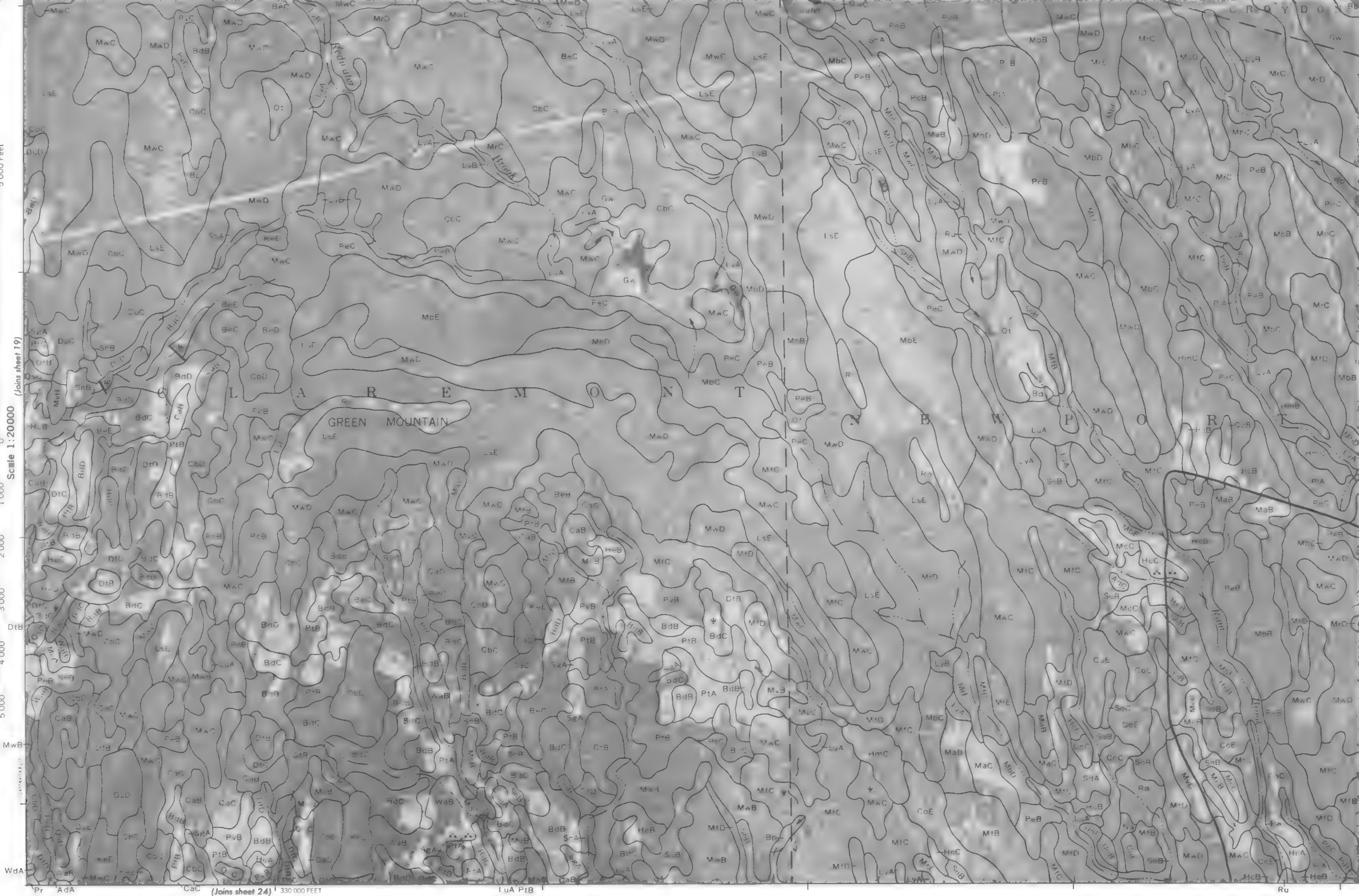
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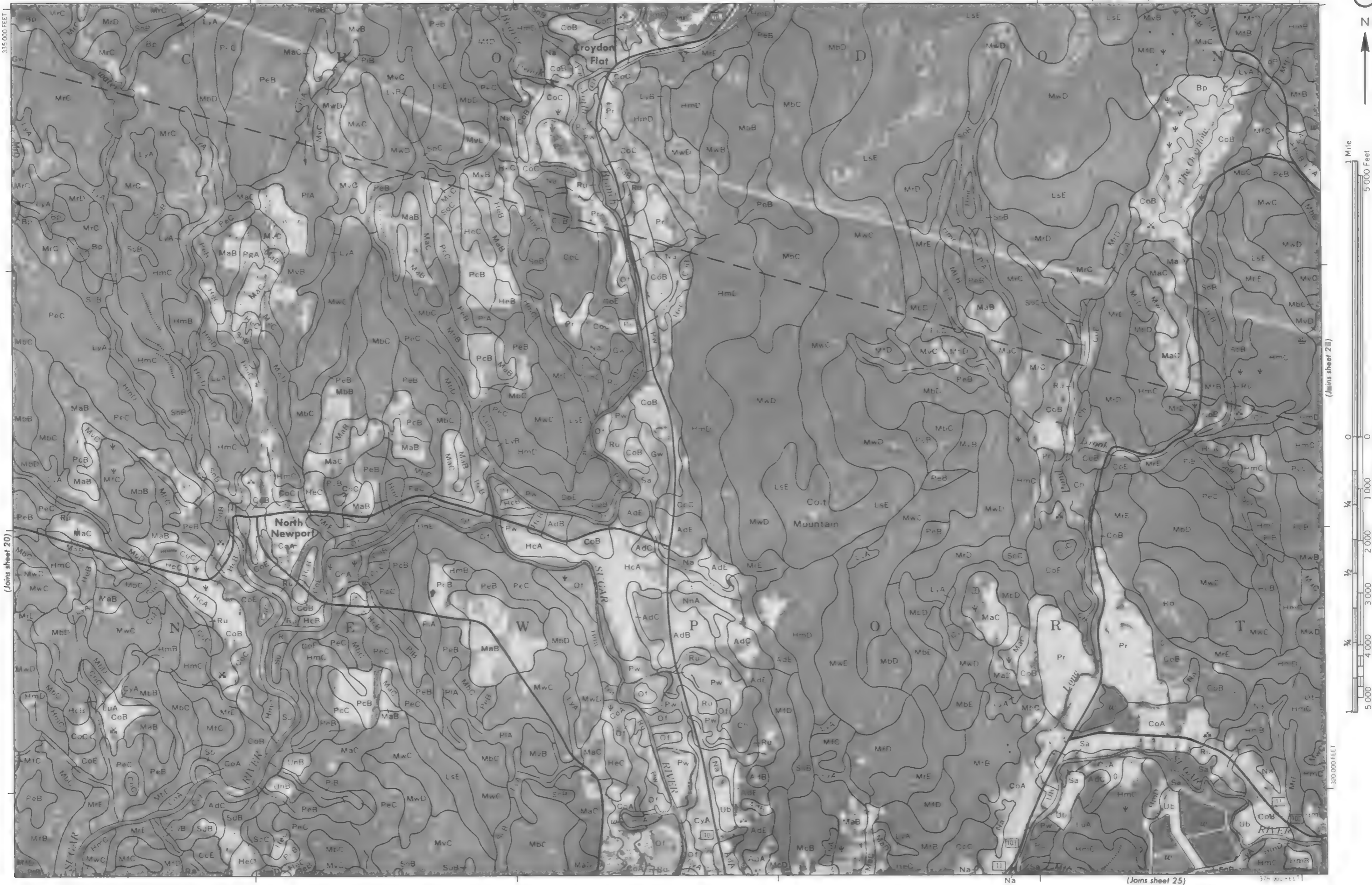


Scale 1:20000



(Joins sheet 24)

(Joins sheet 21)



(Joins sheet 20)

(Joins sheet 25)

Scale 1:20000

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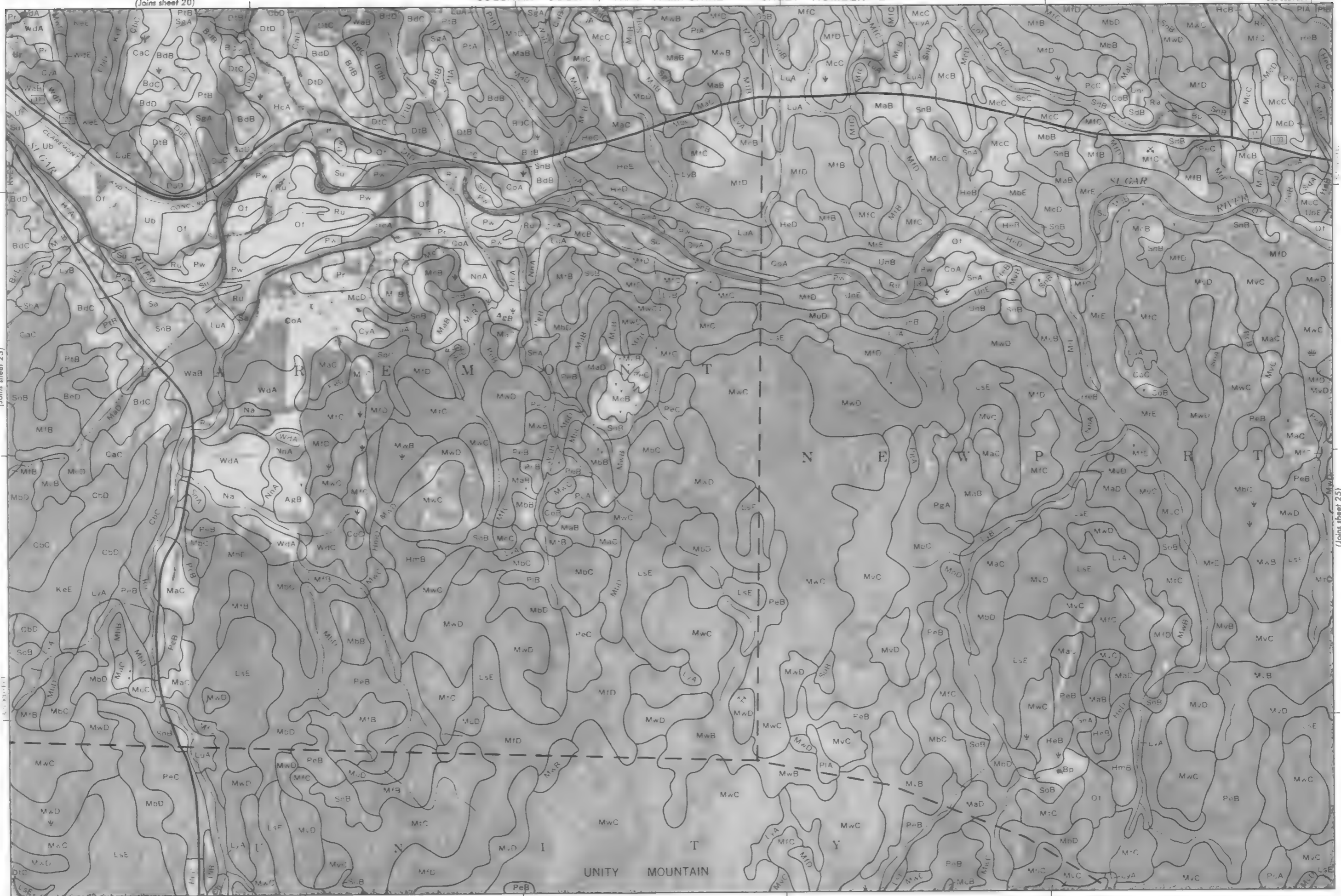


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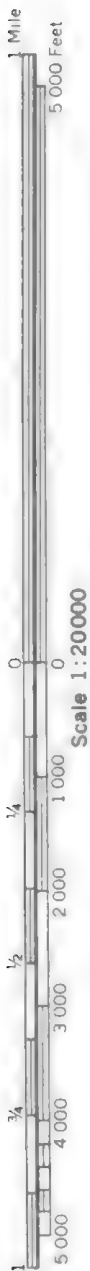
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345 700 FEET





(Joins sheet 22)

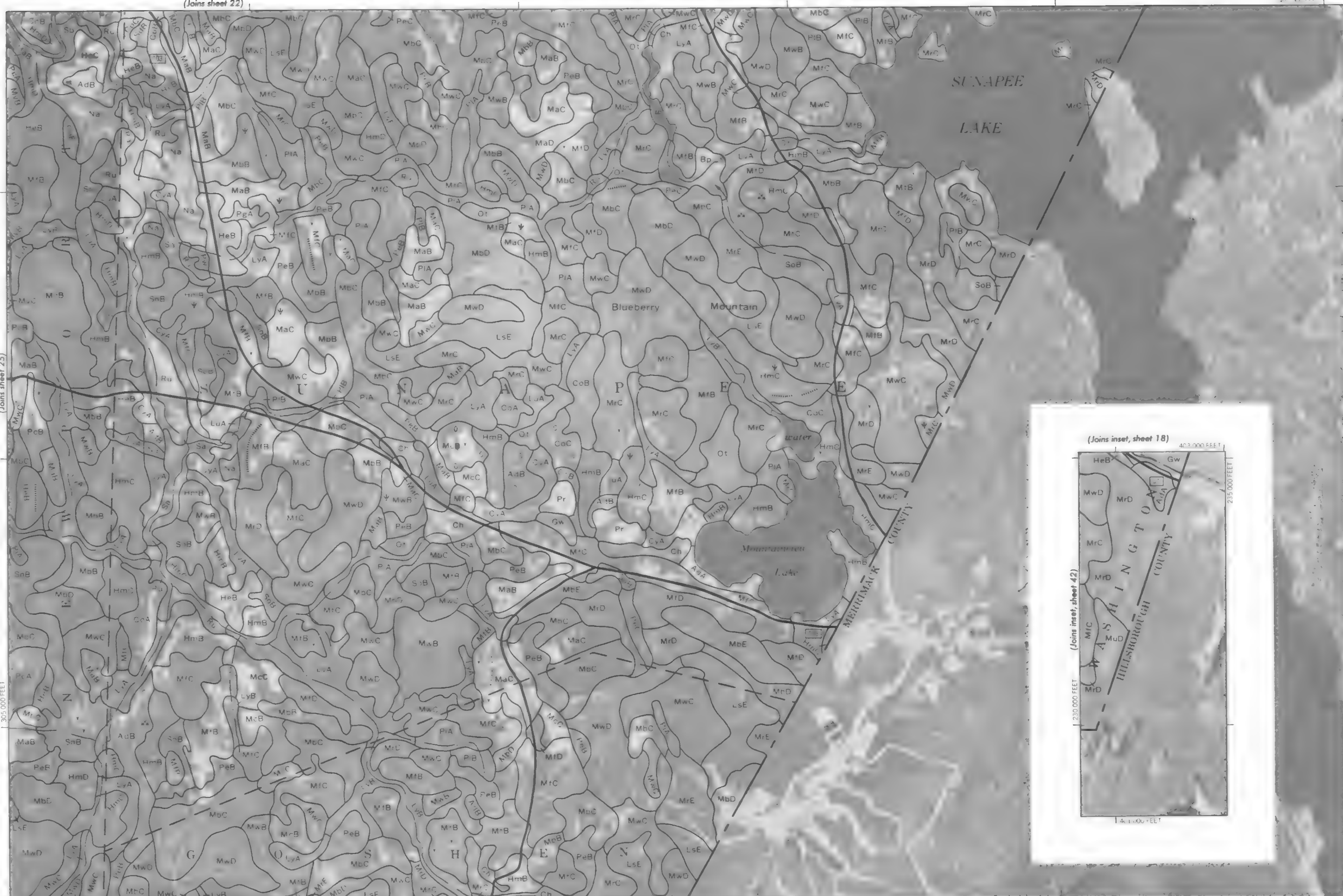


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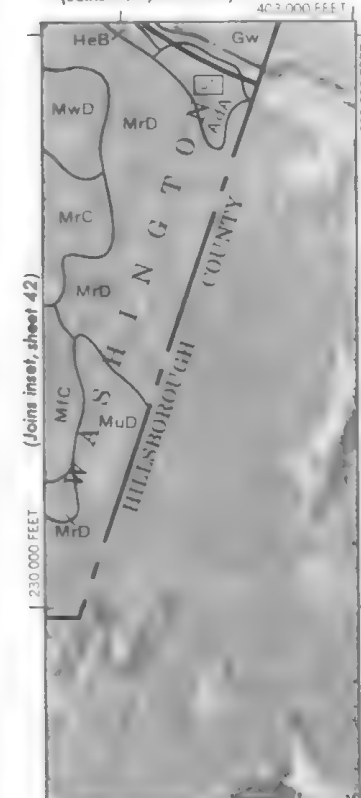
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305,000 FEET

(Joins sheet 30) 380,000 FEET

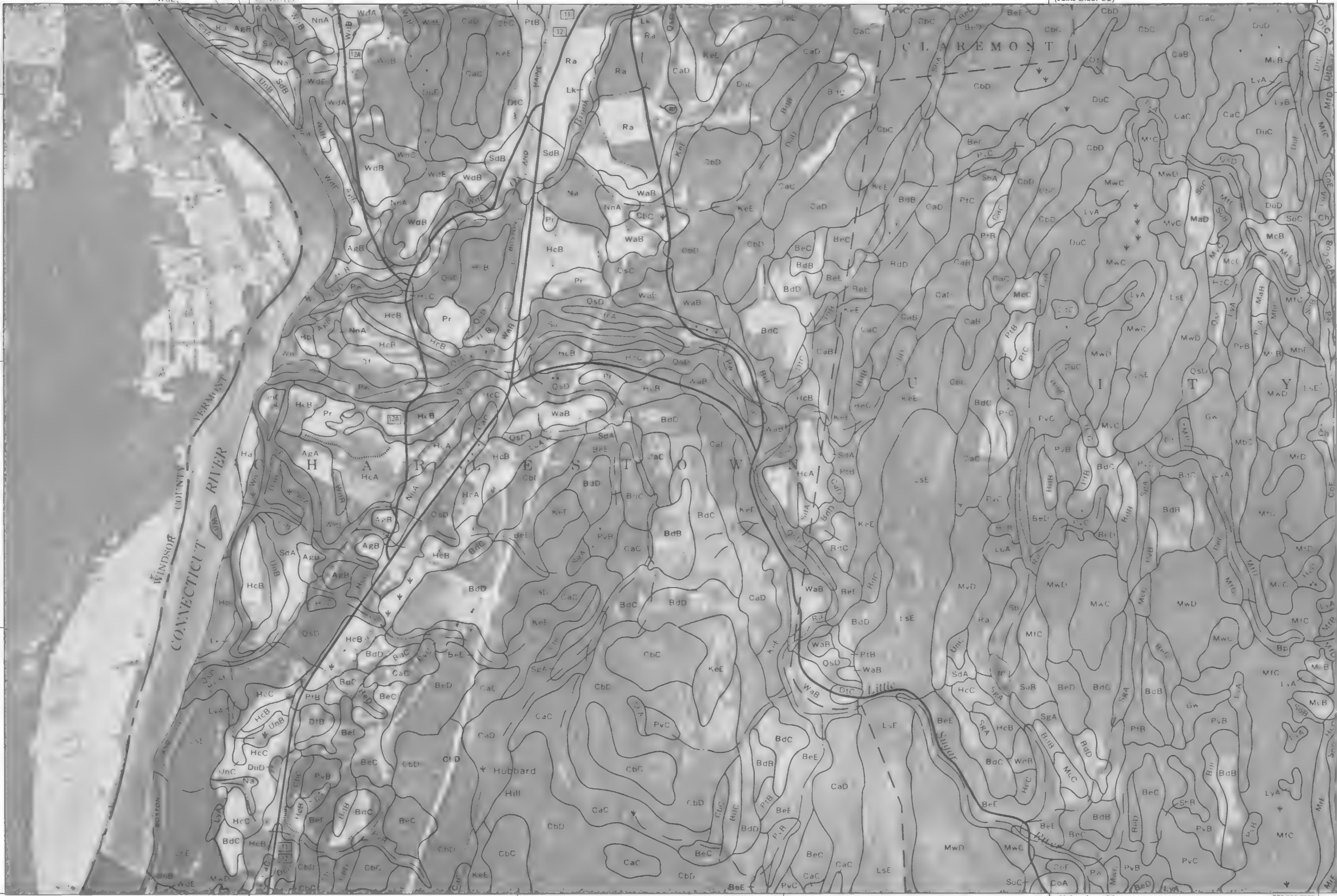


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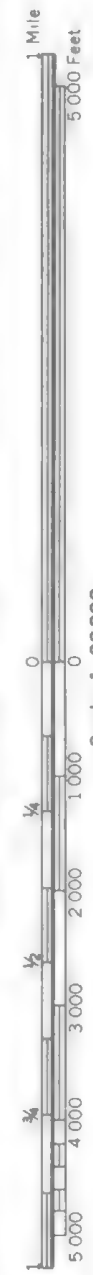


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1:4,000 FEET



(Joins sheet 28)



Scale 1:20000



Mile
5 000 Feet

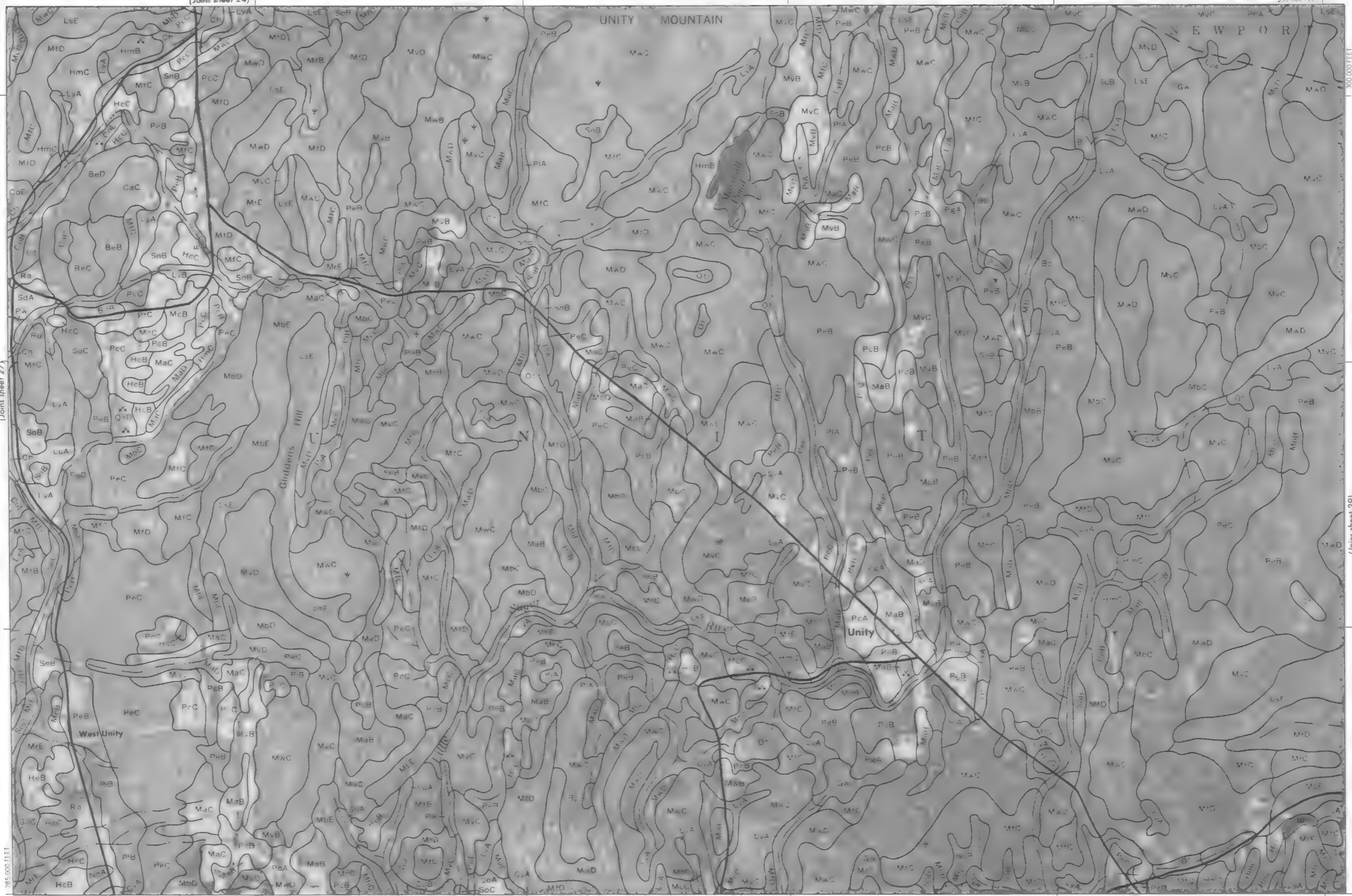
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(Joins sheet 24)

UNITY MOUNTAIN

NEWPORT



(Joins sheet 32)

330 000 FEET

(Joins sheet 29)

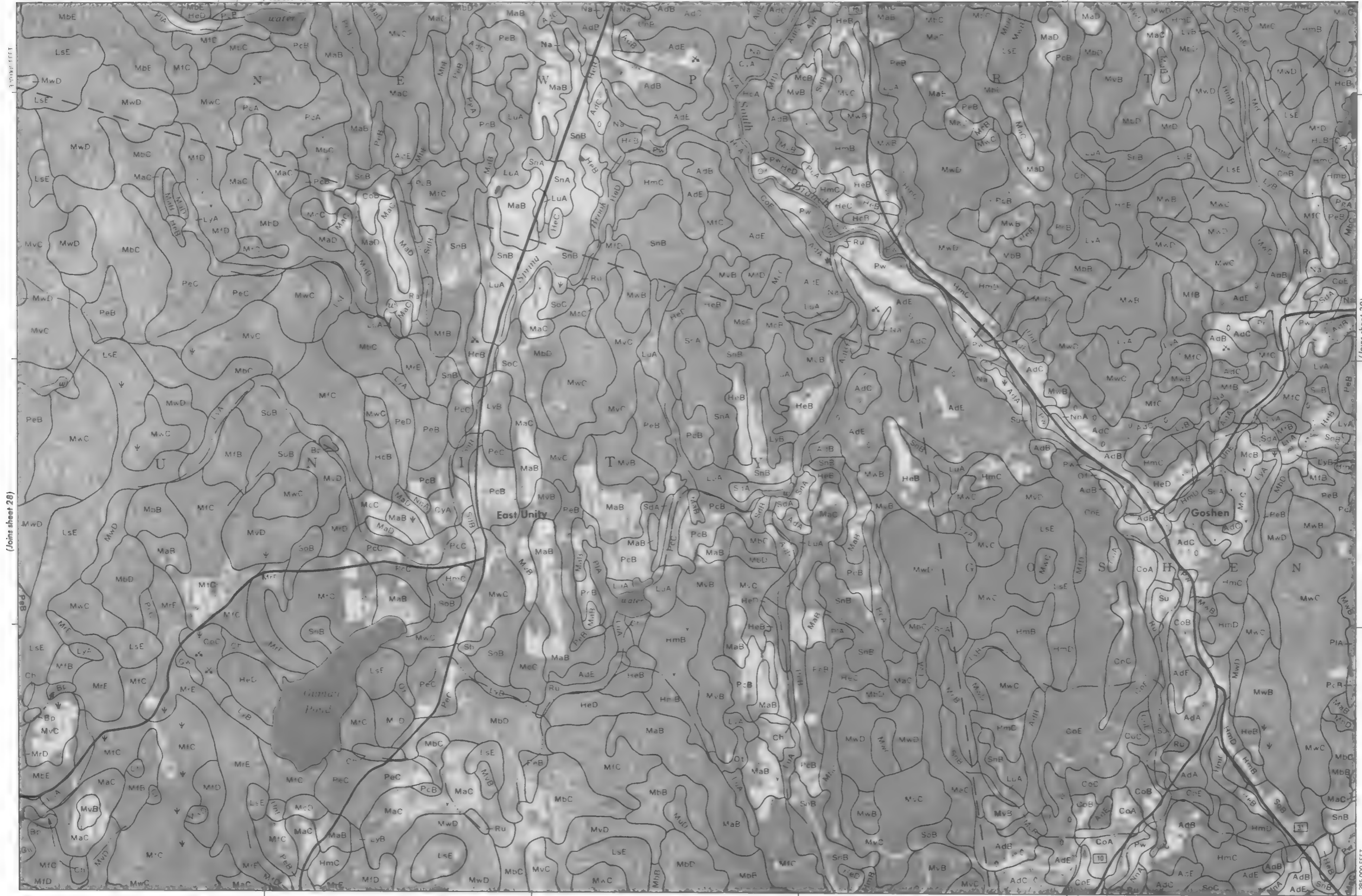


1 Mile
5,000 Feet

Scale 1:20,000

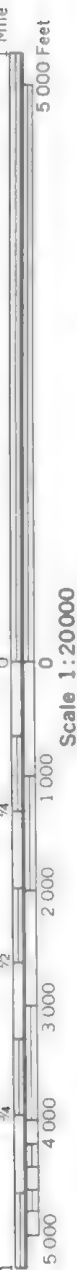
285,000 FEET

375,000 FEET

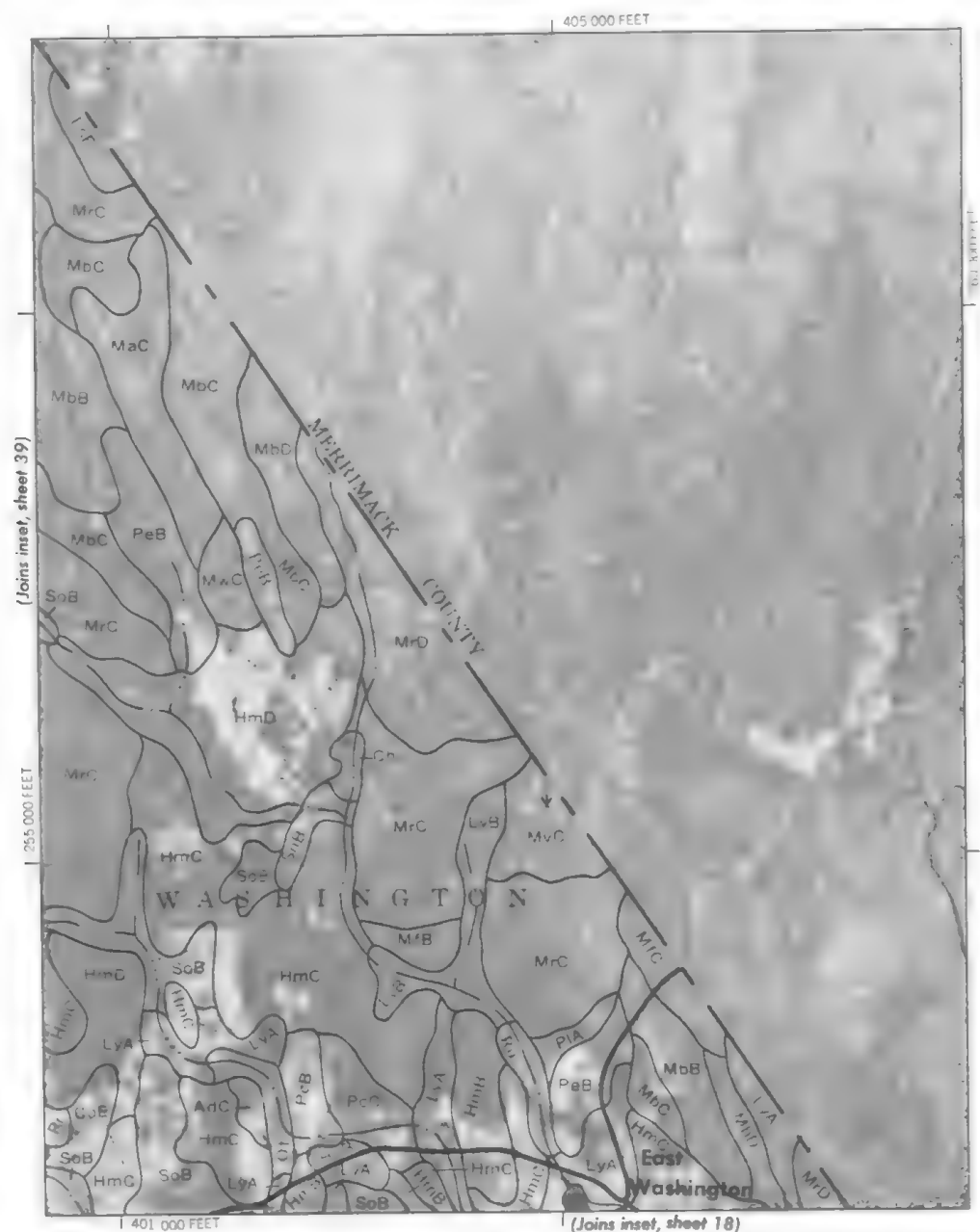
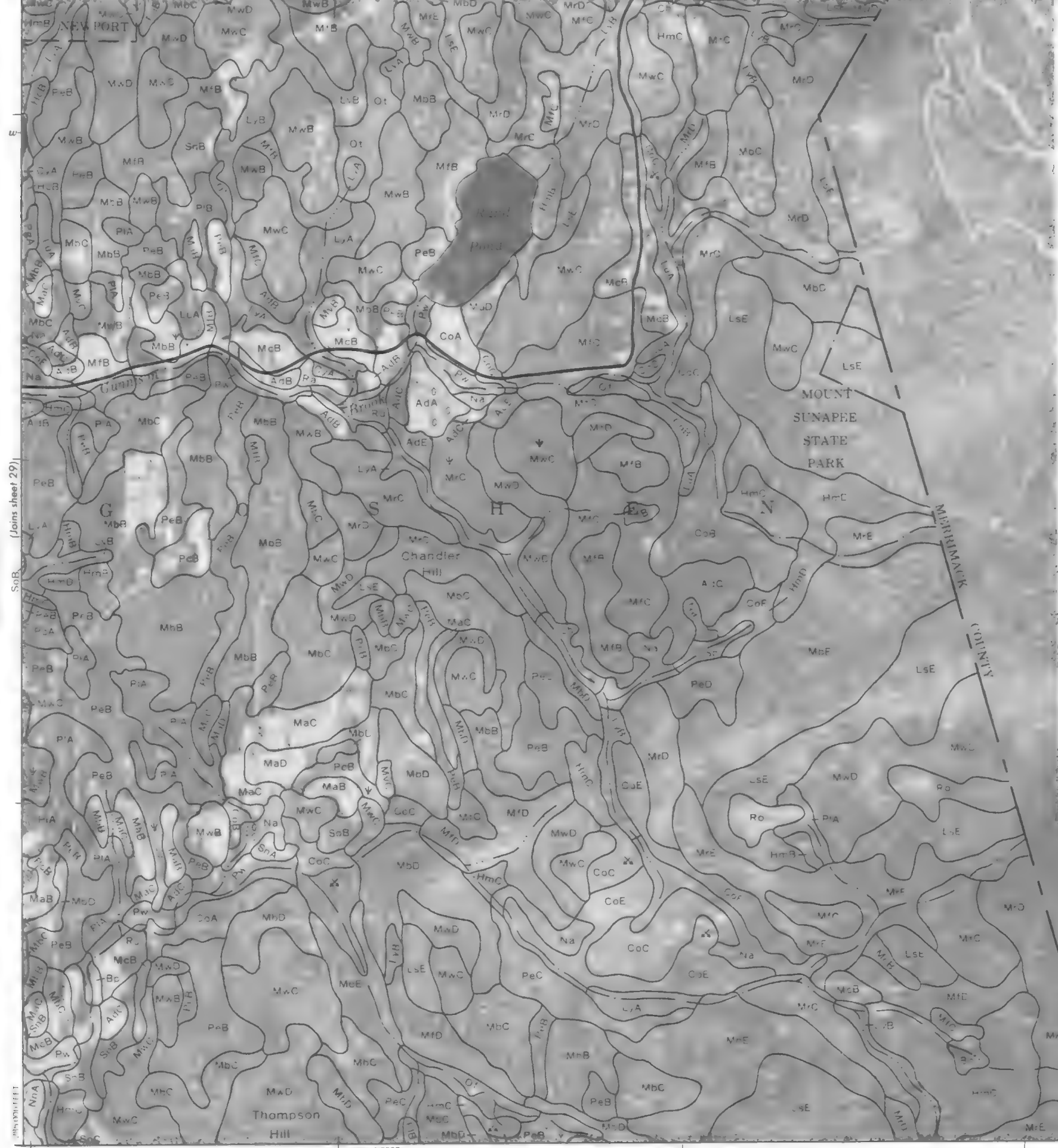


(Joins sheet 26)

400 000 FEET



Scale 1:20000



(Joins inset, sheet 18)



Mile
5 000 Feet

Scale 1:20000

0 0 1000 2000 3000 4000 5000

(Joins sheet 32)

270 000 FEET

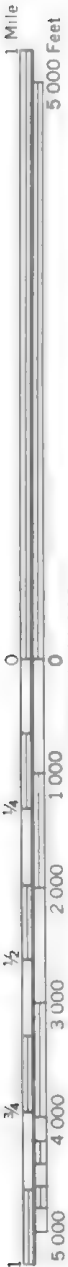
(Joins sheet 36)





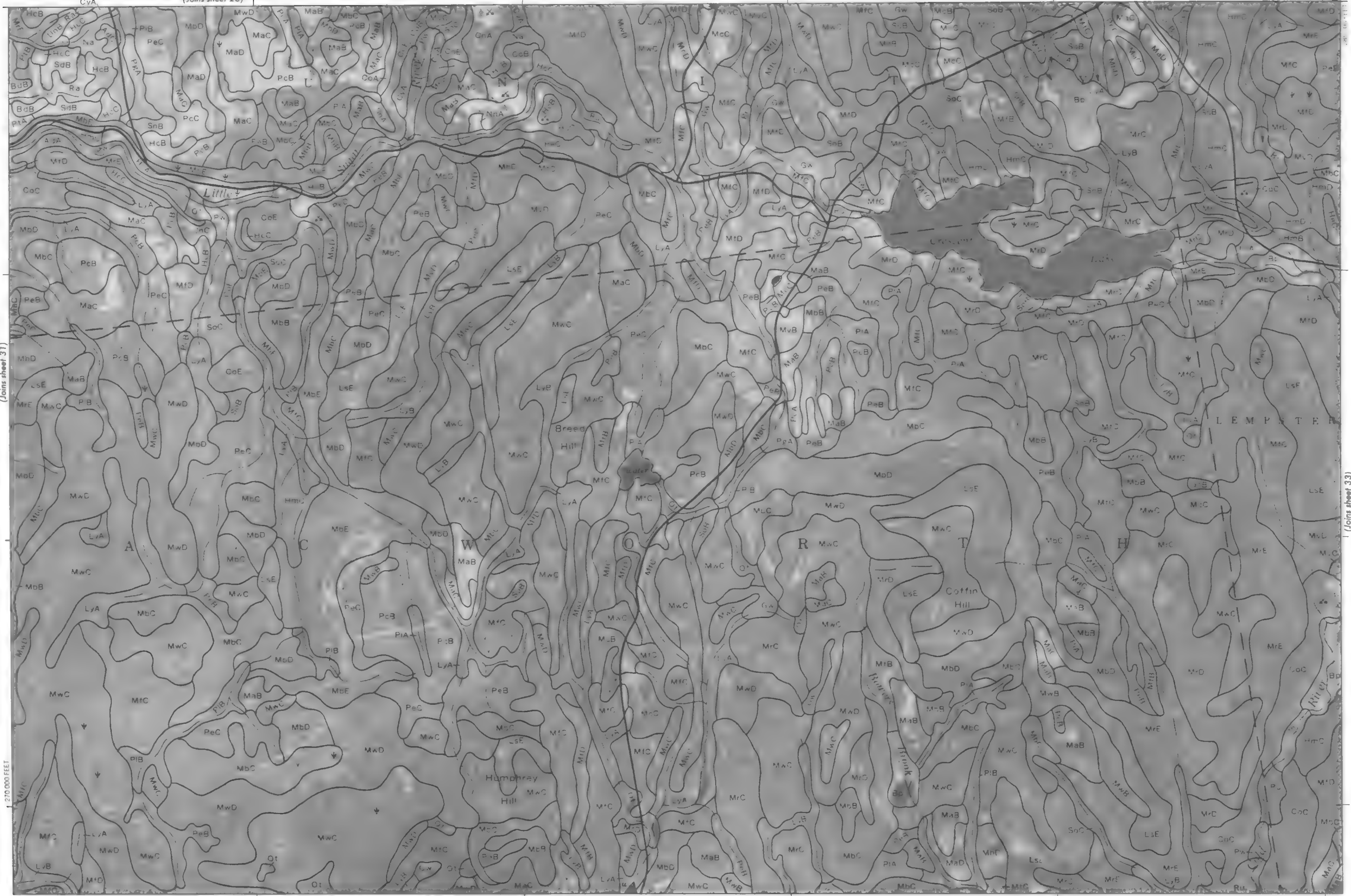
(Joins sheet 28)

MbE



(Joins sheet 31)

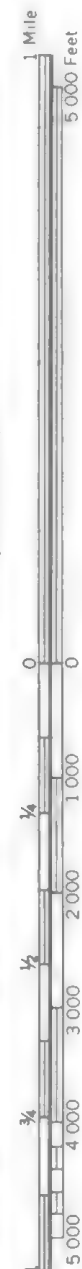
Scale 1:20000



(Joins sheet 37)

330 000 FEET

(Joins sheet 33)



Scale 1:20000

(Joins sheet 34)

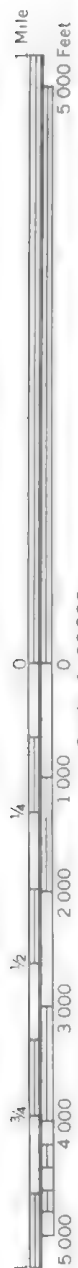
375 000 FEET

(Joins sheet 38)

355 000 FEET

Lempster

(Joins sheet 32)



(Joins sheet 33)

Scale 1:20,000





(Join sheet 36)

255 000 FEET

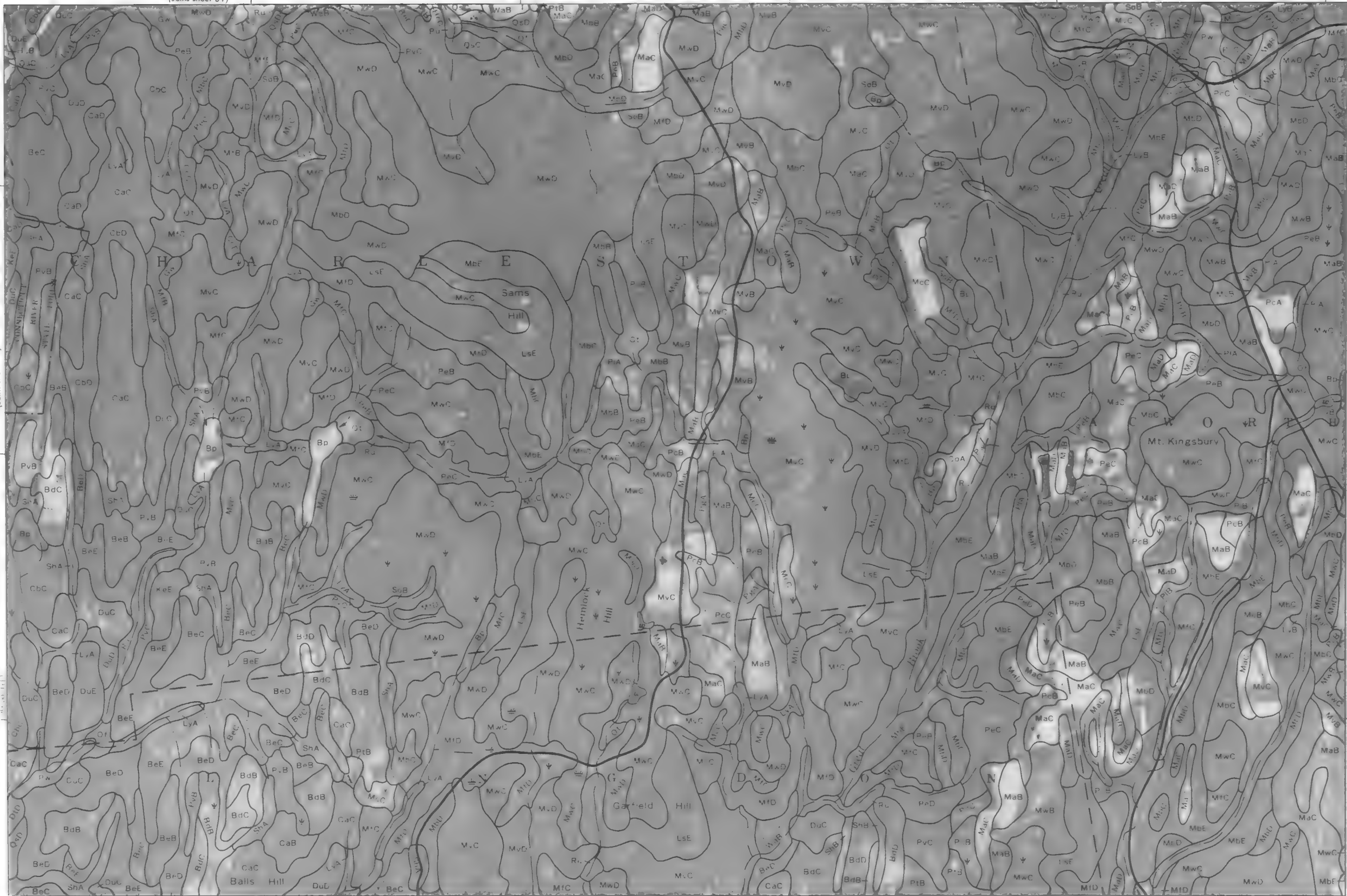
QSD

Scale 1:20000

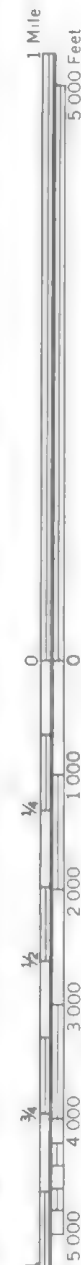


(Joins sheet 35)

Scale 1:20,000

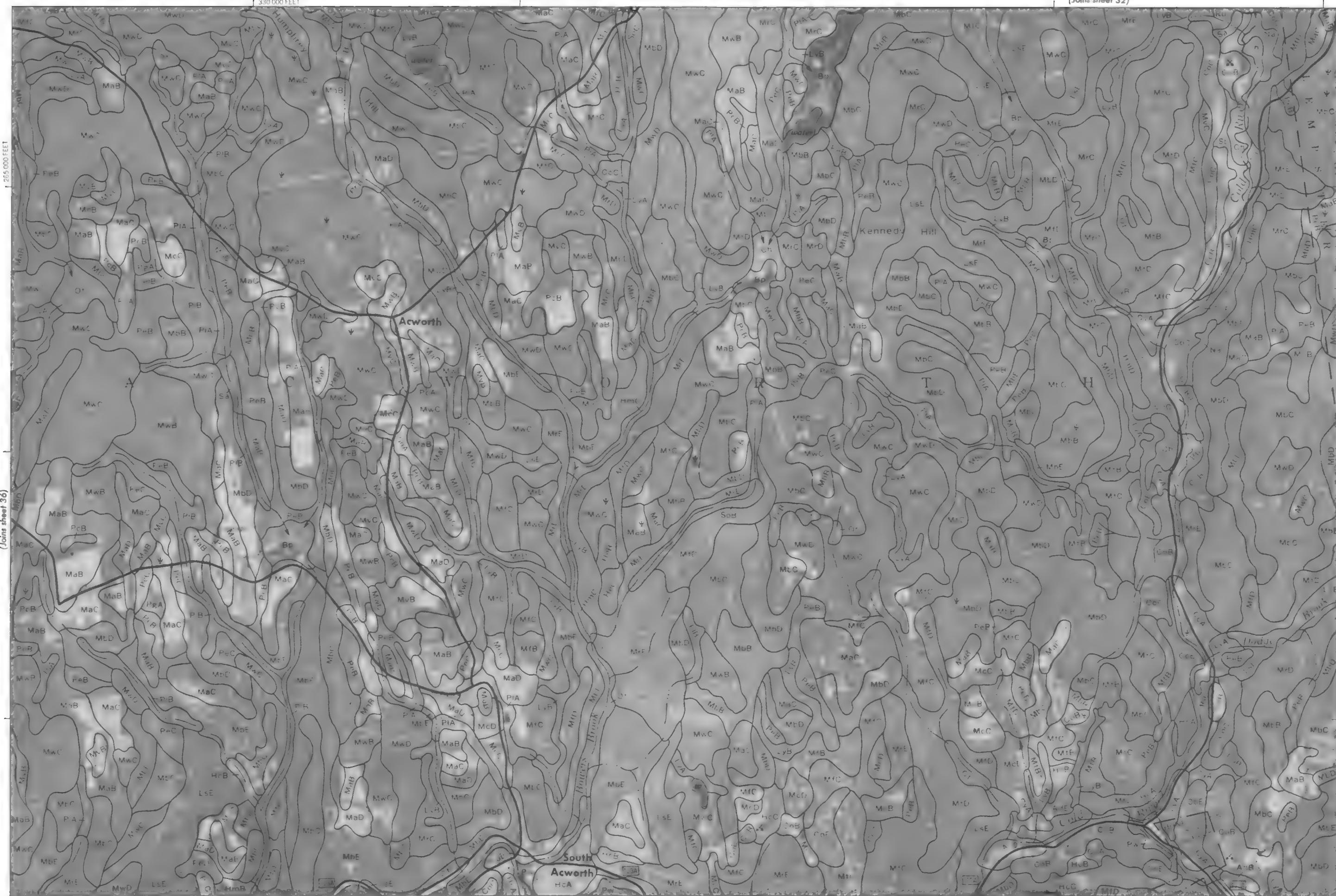


(Joins sheet 37)



(Joins sheet 36)

(Joins sheet 38)



265 000 FEET

(Joins sheet 39)

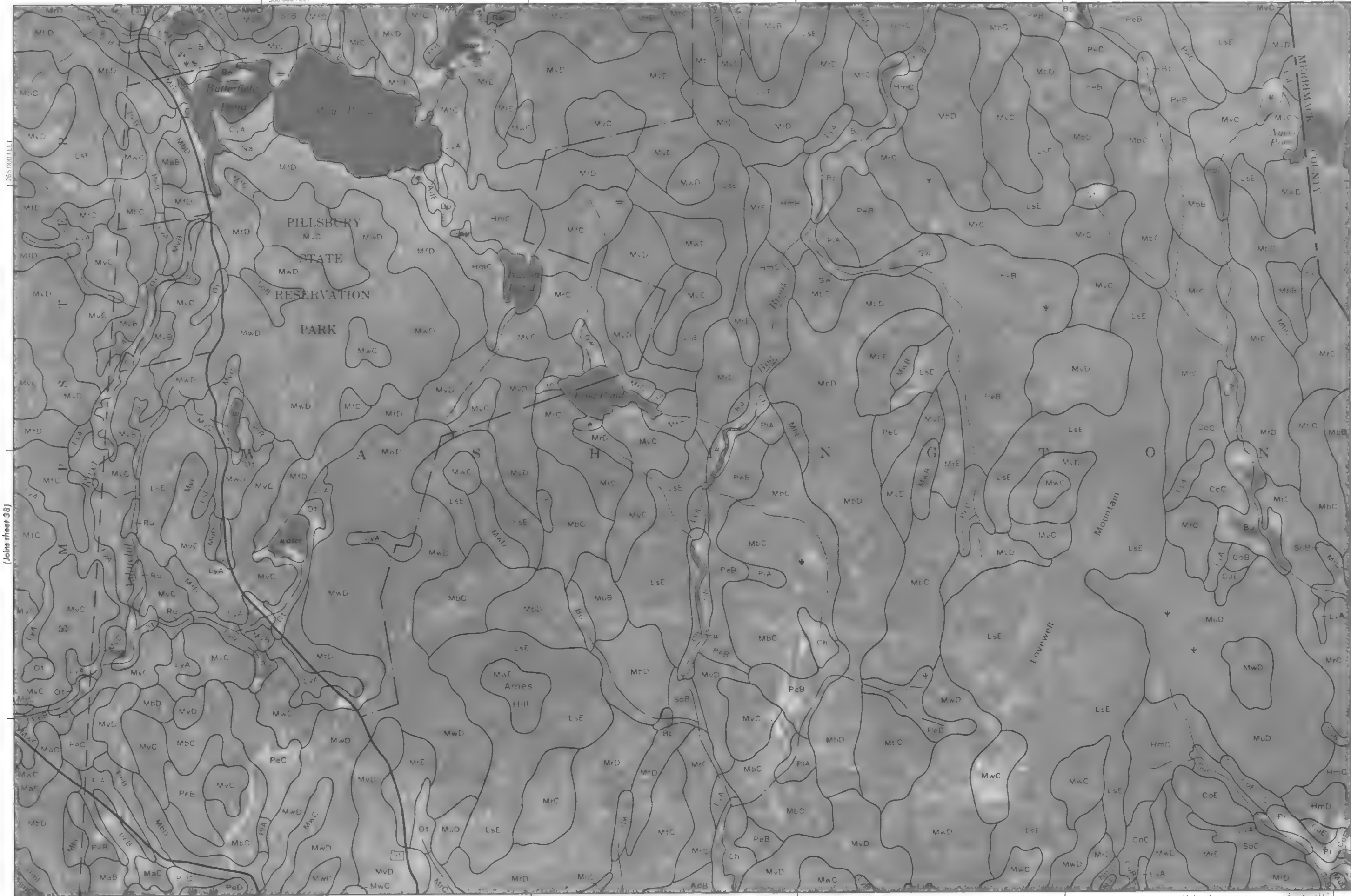
(Joins sheet 43)



380 000 FEET

265 000 FEET

(Joins sheet 38)



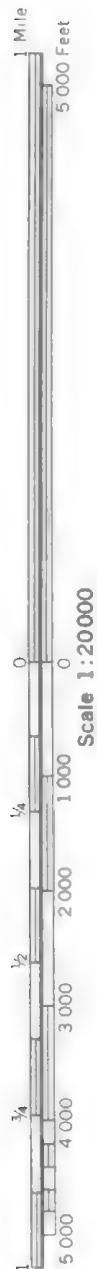
(Joins inset, sheet 38)

265 000 FEET

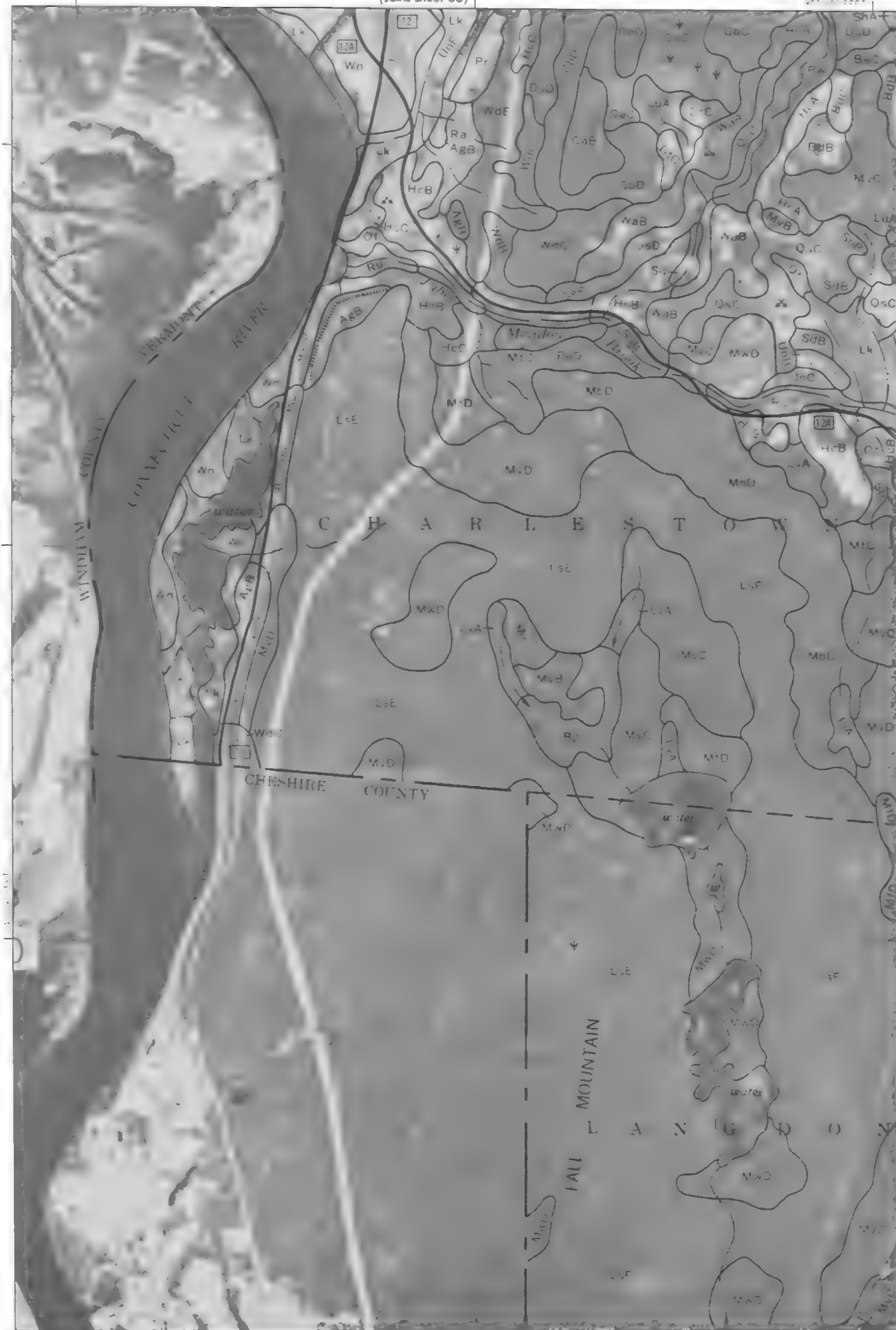
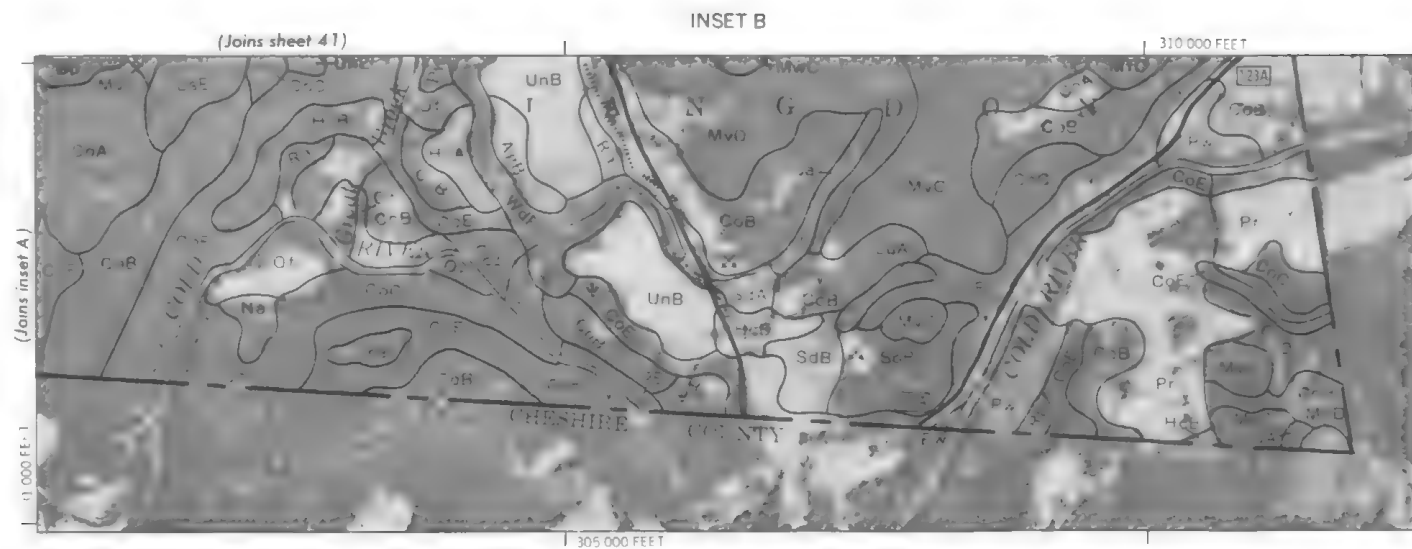
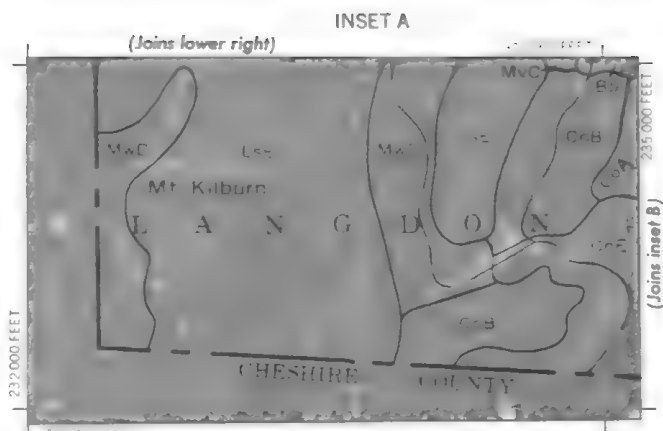
(Joins sheet 44)



(Joins sheet 35)



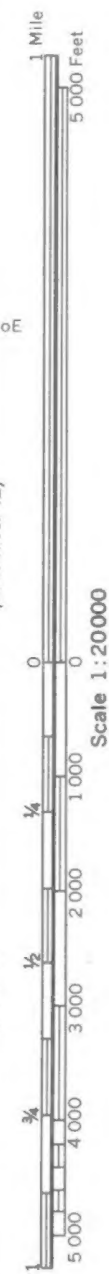
Scale 1:20000





(Joins sheet 40)

(Joins sheet 42)



(Joins inset B, sheet 40)

325 000 FEET

(Joins sheet 37)

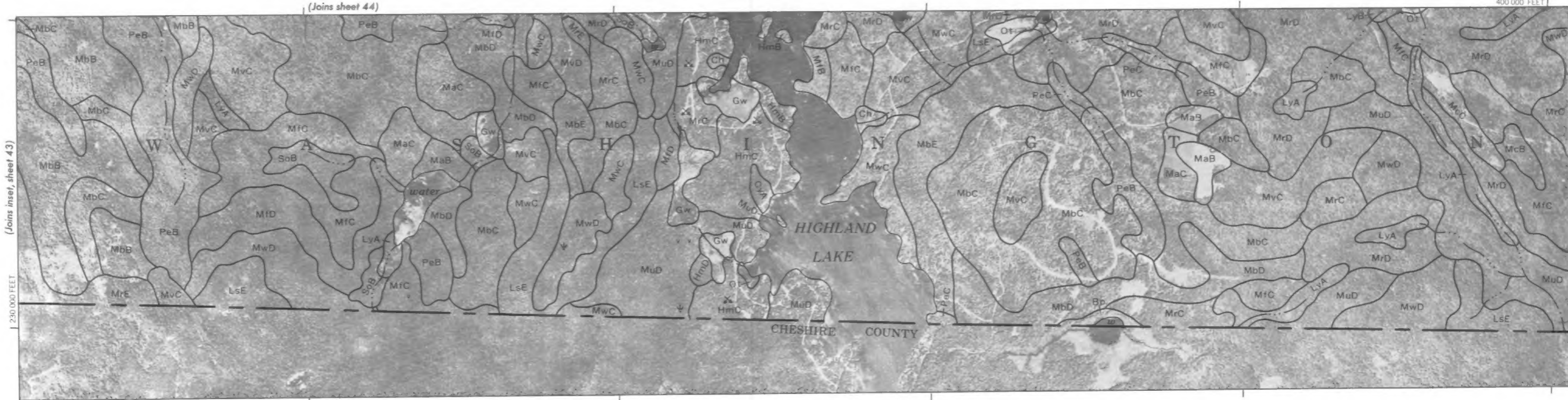


(Joins sheet 41)

Scale 1:20,000

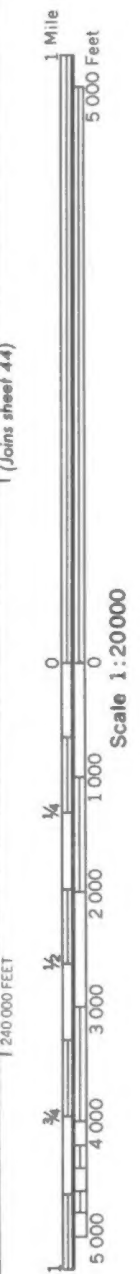
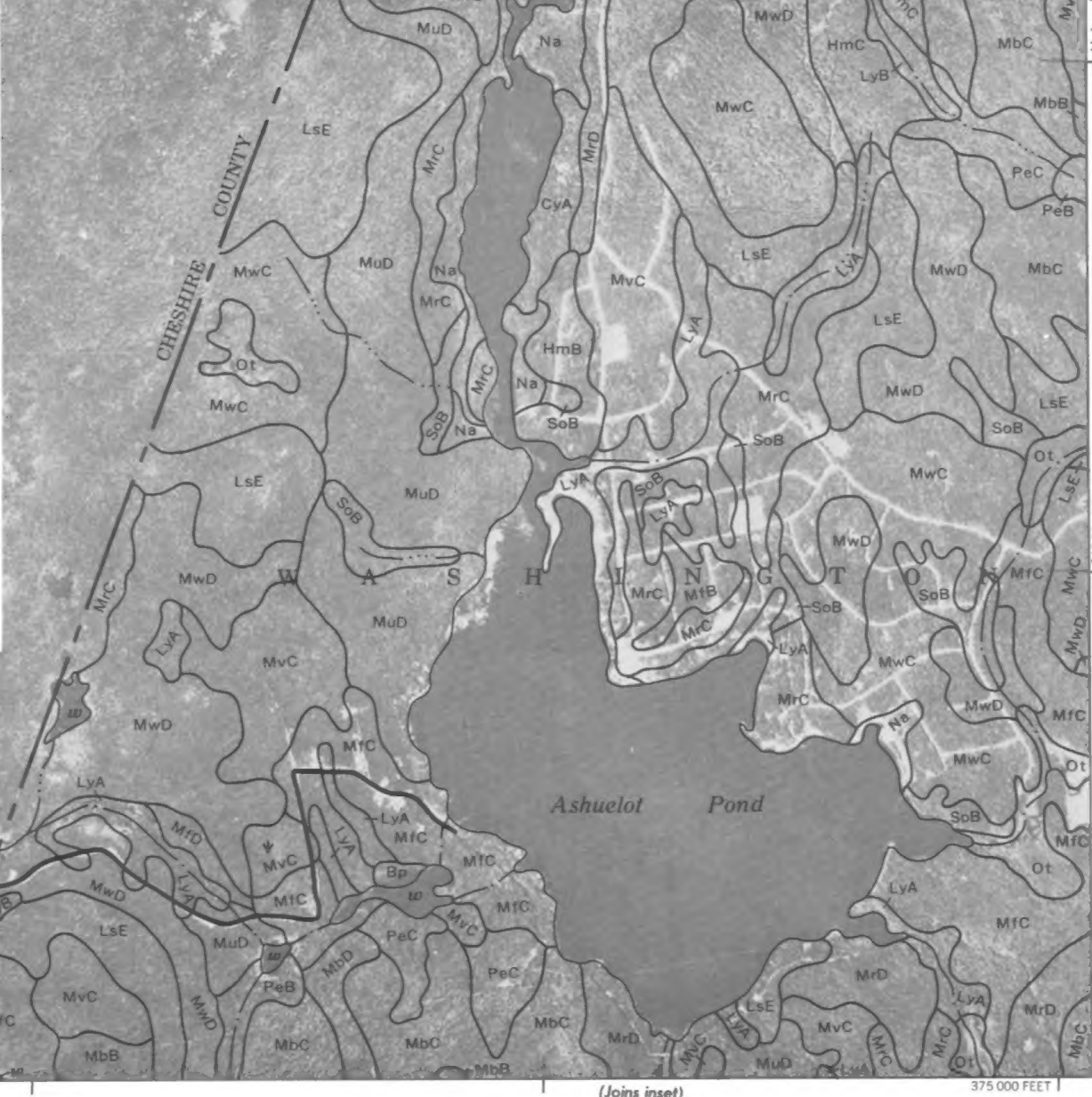
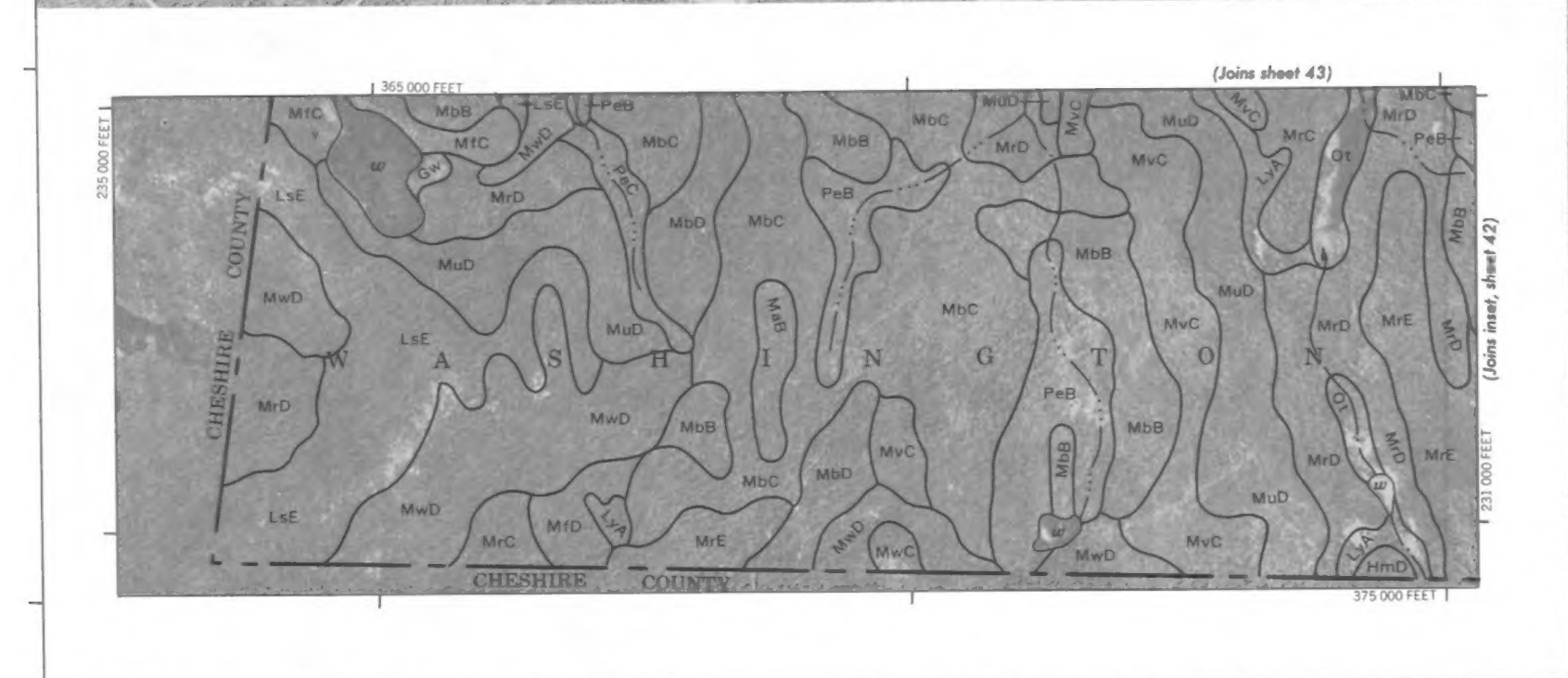


(Joins sheet 44)



(Joins inset, sheet 43)

(Joins inset, sheet 26)



Scale 1:20000

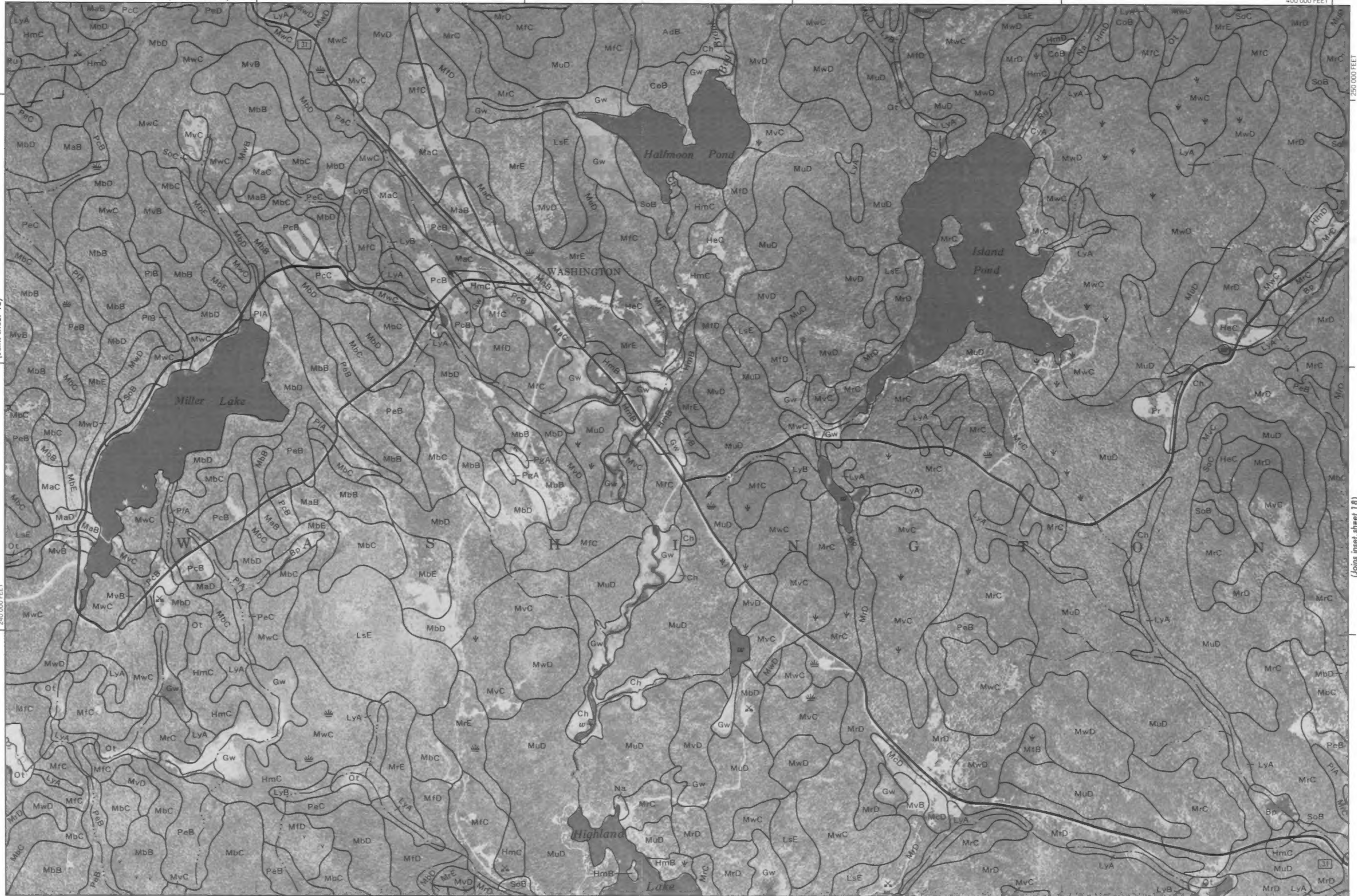
(Joins sheet 39)

400 000 FEET



(Joins sheet 43)

Scale 1:20,000



(Joins inset, sheet 42)

380 000 FEET

(Joins inset, sheet 18)